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RADIATIVE TRANSFERS IN A LEAFLESS DECIDUOUS FOREST CANOPY

D. R. Matt
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Air Resources Laboratories
Silver Spring, Maryland
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UNITED STATES
DEPARTMENT OF COMMERCE
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Secretary

NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION
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Administrator

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Final report to The Environmental Laboratory, Waterways Experiment Station, Corps of Engineers, U.S. Department of the Army

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ABSTRACT

Transfers of electromagnetic radiation are measured and modeled for a deciduous forest in a leafless state. Measured values of incoming and outgoing electromagnetic radiant flux for three wavebands (0.4 to 0.7 μm, 0.3 to 2.8 μm, and 0.3 to 60.0 μm) at six levels within and two levels above the forest are summarized. Included in the summary tables are hourly average flux, standard deviation, relative skewness, relative kurtosis and maximum value. Data are summarized for the winter leafless forest for a clear, a partly cloudy, and an overcast day as required for thorough testing of canopy radiation transfer theory for a mixed species deciduous forest.

Structural data are presented for both the fully leafed and leafless forest. Leaf and branch inclination angle distribution functions are given by canopy layer. Leaf area indices and plant area indices are given.

The thermal vegetation canopy model, TMODEL, developed by Kimes, Smith, and Ranson (1979) was run to simulate the leafless forest condition state for January 24-26, 1981. Predicted canopy layer temperatures are compared to measured air temperatures.

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Introduction

This report is the first in a series on fluxes of electromagnetic radiation ($0.3\mu m \leq \lambda \leq 60.0\ \mu m$) into, within, and out of a mixed species deciduous forest. The objectives of this report are to:

(1) present structural data for the leafless forest condition as required to drive canopy signature models developed by Kimes, Smith and Ranson (1979).

(2) present the measured incoming and outgoing fluxes of solar and terrestrial radiation within and above the leafless forest and to quantify their variation in space and time.

(3) compare predictions of the Kimes, et al. model with observed data to provide model validation for the winter leafless forest condition.

This effort is continuing as part of a research contract with the U.S. Army Research Office, Research Triangle Park, North Carolina. Future reports will involve tests of the Kimes et al. model, as well as other models of canopy radiation distributions, for other seasons of the year and other phenological phases of the forest canopy.

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Site Description.

The ATDL deciduous forest meteorology research facility is located on the U.S. Department of Energy's Oak Ridge Reservation some ten kilometers from the town of Oak Ridge in East Tennessee. This research site is situated on the top of a spur ridge running parallel to Chestnut Ridge (see Fig.1) and is immediately adjacent to the Oak Ridge National Laboratory's Walker Branch Watershed facility. Site elevation averages around 335 m above MSL. The forest cover at the ATDL site consists of an uneven-aged, mixed-species stand of deciduous trees. While the stand is typical of oak-hickory forests throughout the Appalachian region, the trees making up the overstory canopy at this site are predominantly oaks (Quercus species). Quercus alba (white oak) is most numerous followed by Quercus prinus, Q. velutina, and Q. falcata (chestnut, black, and southern red oak). Other species abundant in the overstory canopy include Acer rubrum (red maple) and Liriodendron tulipifera (tulip poplar). These same species are found among the understory vegetation along with Oxydendrum arboreum (sourwood), Nyssa sylvatica (black gum), Carya glabra (red hickory) and Cornus florida (flowering dogwood). When last surveyed in 1976, the average diameter at breast height of codominant trees making up the overstory canopy was about 32 cm and their average height was 21.5 m. Because of the uneven-age and mixed-species composition of this forest, there is great variation in these values from tree to tree. Total stand basal area in 1976 was about 26 m^2 ha^{-1}.

The site is underlain by a formation of dolomitic limestone. The soil at this site is a cherty silt-loam which is characteristically infertile and acidic, which has a high infiltration capacity and a moderate water

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retention capacity, and which is well-drained. Because of the great geologic age of the Ridge and Valley Physiographic Province in which this site is embedded, the regolith extends to great depths at this site (~ 13 m). Consequently, the forest trees rarely experience severe water stress despite routine summer rainless periods of a month or more because support roots extend deep into this layer of weathered material where moisture remains available for plant uptake long after soil moisture nearer the surface is depleted.

Canopy Structure.

Considerable effort has been expended in the quantification of the structure of the forest canopy at this site. A 20 m hydraulic lift was used to access the canopy for a variety of structural measurements. Since the tree heights average 21.5 m with individual trees reaching nearly 26 m in height, these measurements are necessarily incomplete. As developed below, we are attempting to overcome this problem as well as the problems of seasonal and annual variation in canopy structural features through testing and perfecting of indirect canopy structure assessment techniques developed by Dr. J. M. Norman of the University of Nebraska.

The vertical distributions of leaf areas and inclination angles were measured throughout the summer of 1978. Because of access problems involving the positioning of a 40-ton machine within an undisturbed forest, such measurements turned out to have been mostly made on the south side of tree crowns. Because of the obvious bias introduced by this limitation, we did not attempt to measure leaf orientation angle distributions. Measurements in a variety of continuous plant canopies reported in the literature reveal no tendency toward azimuthal anisotropy in leaf variations; hence, we feel justified in assuming azimuthal isotropy of leaf orientations in our forest.

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To obtain the vertical distributions of leaf areas and inclination angles, measurements were made using an open-framework cubic box with 0.5 m sides identifying sampling volumes of 0.25 m^2 area by 0.5 m vertical increments along 22 vertical transects. Origins of these transects were randomly located on the ground within the area accessible to the hydraulic lift. A plumb bob with a graduated string was used to maintain a constant horizontal position and to define vertical heights as the measurements were replicated vertically. The measurements of leaf inclination angles were made directly using a common protractor having a plum bob attached to the index. By aligning the straight side of the protractor with the plane of the underside of each leaf, the inclination of that leaf, from the vertical, was measured to the nearest degree, and recorded by species. This angle was then subtracted from 90° to get its complement which is the leaf inclination in degrees from horizontal, the desired quantity. Following determination of the inclination angles of all leaves falling within the 0.5 m cube, all leaves and portions of leaves within the cube were harvested and placed in paper bags according to species and canopy level. These leaves were oven-dried at 105°C for 24 hours and then weighed. Oven-dried weights were recorded for subsequent conversion to leaf area.

Factors for conversion of leaf dry weight to leaf area were derived as follows. At least 100 leaves of each species of tree present were collected at 0 to 20 and 20 to 50 cm, and at 1 to 2, 5, 10, 15, 20, and 23 m levels in the forest. Using a LI-COR LI-3000 leaf area meter, the total area of the leaves in these samples was determined. Then these samples were oven-dried and weighed as described above. From these data, the oven dry weight of a unit of leaf area was calculated which was then applied to the sample

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weights at the appropriate canopy levels to derive estimates of leaf areas at those levels.

Fig. 2 shows the vertical distribution of leaf inclination angles expressed as departures (in degrees) from horizontal. Leaves in the understory tended to be displayed at angles near horizontal while leaves higher up were inclined more toward the vertical. Plotting the cumulative frequency of leaf inclinations as a function of inclination angle by major canopy strata yields Fig. 3. This figure shows that at upper layers within the forest (layers 1 and 2), inclination angle distributions approximate planophile distributions while that lower in the forest (layer 3) approachs an extreme planophile distribution.

The vertical distribution of leaf area indices (LAI's) is shown on Fig. 4 while the cummulative LAI distribution from the top of the canopy downward are shown for three major canopy strata in Fig. 5. Obviously, understory vegetation contributed little to the overall LAI of the forest of about 4.7.

Both leaf inclination and LAI are known to vary significantly from season to season and from year to year, but thorough documentation is difficult to obtain. The data of Figs. 2 through 5 represent over 10 man months of effort; hence, seasonal replication of such measurements is impossible and annual replication is implausible. Nevertheless, this information is necessary if the validity of canopy radiation transfer theory is ever to be determined for dynamic, real-world forest canopies. Dr. J. M. Norman has developed an indirect canopy structure assessment technique involving inversion of a model of canopy radiation transfer. He has tested this approach in several agricultural crops and results of these tests are very encouraging. We will initiate periodic measurements of the diffuse to direct photosynthetically active radiation flux density ratios in our forest in the

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spring of 1982 as required to apply this technique for structural assessments at our site. We are confident that this approach will provide a means of rapid and accurate assessment of canopy structure permitting quantification of the dynamics of canopy structure development as required for understanding deciduous forest canopy radiation absorptance, reflection, and thermal emittance, among other things.

Measurements of woody biomass were made throughout the summer of 1980. Measurements of the diameters and lengths of reasonably straight segments of all woody plant parts falling within the 0.5 m cube along with their inclination angles were recorded. All such segments were assumed to approximate right-cylinders and their total surface area, volume, and silhouette areas caiculated. These measurements proved so time consuming that portions of only 14 vertical transects were sampled in 1980. Such measurements in the overstory were very sparse owing to problems of accessibility. Consequently, we utilized another indirect measurement technique developed by Dr. J. M. Norman (Norman, 1981) to complete this data set. Dr. Norman has designed and built a directional diffuse radiation sensor which provides information needed to drive a simplified model inversion. Dr. Norman and one of his students, Larry Toole, came to Oak Ridge in the spring of 1981 for a test of this approach. Measurements were made in our forest on a clear spring day prior to budbreak leaf expansion. Those data were converted to plant area indices (PAI's) which in the absence of leaves, is really the area indices of woody biomass only. Fig. 6 shows the results of these measurements along with the results of our direct measurements of woody biomass PAI. The two approaches compare favorably at lower levels in the forest canopy where we were able to obtain adequate direct measurements. Consequently, we feel that the PAI's estimated via Norman's sensor for higher in the canopy where direct measurement

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data are lacking can be accepted as reasonable estimates of woody biomass area indices in the winter and spring of 1981. As shown in Fig. 6, the total woody PAI of this stand was of the order of 0.6. Combining this with our 1978 estimate of LAI indicates that, at full-leaf, the total PAI of this forest stand approaches 5.5.

Results of measurements of branch and bole inclination angles are shown in Fig. 7. While inclination angle distributions at upper levels in the forest tend toward uniform, woody biomass in the trunk space (layer 3) is inclined more vertically indicating that woody biomass there occurs principally as tree trunks.

Radiation Measurement Facility.

The radiation measurement facility (Fig. 8) at the forest meteorology research site consists of two 33.5 meter triangular towers 35 m apart which support cable pairs at eight levels upon which instrumented trams traverse through the forest. These cables are oriented S 18° W and parallel to the ground surface. The cables are mounted at 1, 6, 10.5, 14, 17, 21, 26, 33 m heights above the forest floor. A 44 m walkup tower is immediately adjacent to the eastern-most triangular tower permitting ready access to work platforms on the triangular tower at each tram level. Manifolds provide compressed air and dry nitrogen to all tram levels as required for the net radiometers on each tram. Compressed air provides an air curtain over the net radiometer domes for prevention of nighttime dew and frost formation on the domes while the dry nitrogen gas maintains the flexible plastic domes in a hemispherical shape.

TABLE 1: TRAM INSTRUMENTATION

Radiation Measurement	Instrument	Waveband (μm)	Response time (sec)	Manufacturer & Model	Comments
Shortwave incoming	Pyranometer	0.285- 2.8	5	Kipp & Zonen Model CM-5	Double glass domed pyranometer with ±5% cosine response.
Shortwave outgoing	Inverted pyranometer	0.285-2.8	5	Kipp & Zonen Model CM-5	"
Allwave net	Net pyradiometer	0.3-60.	> 30	Swissteco* Model S-1	Single polyethylene dome inflated & desiccated with N_2
Allwave incoming	Net pyradiometer with black body cavity	0.3-60.	> 30	Solar Radiation* Instru.Model SRI 4 Net	As above with black body cavity temperature measured with Yellow Springs model YSI-44032 thermistor
Photosynthetic incoming	PAR pyranometer	0.4-0.7	$< 10^{-6}$	Lambda Instru. Corp.-Model LI-190S	Silicon cell quantum detectors with interference filters
Photosynthetic outgoing	Inverted PAR pyranometer	0.4-0.7	$< 10^{-6}$	Lambda Instru. Corp.-Model LI-190S	"

*Some Swissteco instruments, model S-1, are used as net radiometers with black body cavity

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The trams serve as mounting platforms (Fig. 9), for radiation instruments at each of the eight levels. Table 1 lists the instruments used for radiation flux measurements in three wavebands. All radiation instruments are attached to the trams such that the sensing surfaces are maintained near horizontal throughout each traverse. Pyranometers equipped with shadowbands are situated at each tram level for measurement of diffuse shortwave radiation. These instruments are mounted on booms oriented toward the south off each triangular tower providing two measurement replications of this variable at each level. Additional radiation measurements made at 44 m include the incoming global ultraviolet radiation flux (0.285 - 0.395 μm) and the normal incident shortwave radiation flux (0.25 - 4.0 μm). Incoming allwave radiation fluxes are derived using a Funk-type net pyradiometer equipped with a black body cavity in which temperatures are monitored using precision thermisters. Subtraction of the net allwave flux measured by a second Funk-type net pyradiometer from the allwave incoming yields estimates of the outgoing allwave flux.

Ancillary meteorological and boundary condition data are observed along with the radiation fluxes described above in order that environmental conditions present during the radiative flux observations can be characterized. Air temperatures within and above the forest are measured with thermistors in aspirated radiation shields at 3, 6, 14, 20, 23, 29, and 44 m. Three soil temperature profiles consisting of thermistors at 1.5, 3., 6, 12., 25., and 50 cm below the soil surface are also monitored. Six heat flux disks provide replicated estimates of the heat flux through the soil at a 10 cm depth. Additionally, the horizontal wind speed, wind direction, and dew point are measured at 29 and 44 m.

Sensor output signals were converted to digital values and recorded on magnetic tape. All tram instrumentation was scanned every 20 seconds while

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temperature profiles and heat flux disks were sampled once a minute. The diffuse shortwave profiles were also scanned once a minute since their variation over shorter periods of time was not expected to be significant. These data sampling rates were the most rapid possible on the data acquisition system in use during the winter of 1980-81.

Data conversion into scientific units and statistical analyses were performed on IBM 3033 computers. Shortwave sensors were calibrated in March 1981 by comparison with a "shelf standard" Eppley PSP model II pyranometer which was itself calibrated in January by the Solar Radiation Facility, Environmental Research Laboratories, Boulder, Colorado. Photosynthetic radiation instruments were compared to a "shelf standard" which was calibrated by the manufacturer. The net radiometers were calibrated by the occluded disk technique which determined the shortwave component calibration coefficients.

Data Analysis.

The measured values were checked for validity within upper and lower bounds. Statistical anlysis was accomplished using the Statistical Analysis System (SAS) software package (SAS, 1979).

Statistics were calculated for incoming and outgoing fluxes in three wavebands; shortwave (0.285 to 2.8 μm), allwave (0.3 to 60.0 μm) and photosynthetically active (0.4 to 0.7 μm). Fluxes in these wavebands were measured by intruments of significantly different response times; thus, only values from similar instruments are compared directly. Hourly mean incoming and outgoing fluxes for the three wavebands on a clear day (Jan. 25, 1981 in Fig. 10) a partly cloudy day (Jan. 26 in Fig. 11) and an overcast day (Jan. 20 Fig. 12) are presented in the Appendix.

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Statistics which were calculated for incoming and outgoing waveband radiation flux components at each level are the hourly mean, standard deviation, relative skewness and relative kurtosis. In addition, the maximum value observed during each hour are presented. Table IA in the appendix, presents the shortwave radiation component including the hourly diffuse radiation means at the lower seven levels.

The hourly estimates of skewness and kurtosis are determined by two passes through the data; the first pass calculates the mean, $\bar{x}$, and standard deviation, s, while the second pass uses a standardized variable.

$$z_i = (x_i - \bar{x})/s$$

to compute the relative skewness by

$$\text{skewness} = \frac{N}{(N-1)(N-2)} \Sigma(z_i)^3 \text{ for } N > 3$$

where N = number of observations. If $N < 3$ or $s = 0$ the skewness is undefined and recorded as missing. The relative skewness represents the degree of skewness relative to the distribution's degree of spread. An exponential distribution function has a relative skewness of 2 and a normal distribution function has a relative skewness of 0.

The relative kurtosis is calculated by

$$\text{kurtosis} = \frac{N(N+1)}{(N-1)(N-2)(N-3)} \Sigma z_i^4 - \frac{3(N-1)(N-1)}{(N-2)(N-3)} .$$

For $N < 4$ or $s = 0$ the kurtosis is undefined and recorded as missing.

The relative kurtosis compares the relative peakedness of a distribution to the peakedness of a normal distribution function. A negative kurtosis

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is flatter than a normal distribution while a positive value indicates a more peaked distribution; a normal distribution's relative kurtosis equals zero.

No attempt will be made here to interpret the measured fluxes as summarized in the appendix. Some general features are however readily apparent. For the winter leafless condition, the photosynthetically active radiation and shortwave radiation behave similarly. On clear days, the hourly flux density distributions are more uniform in the upper canopy and tend to become more normal nearer the ground. Also, on the clear day the sign of the skewness at midday changes with depth into the canopy while it remains unchanged with other cloud cover conditions. Over the coarse of a day, between 50 and 60% of the incoming shortwave and PAR radiation flux penetrates the winter leafless forest to the ground surface.

Model Implementation.

The thermal vegetation canopy model, TMODEL, developed by Kimes, Smith, and Ranson (1979) and reported by Smith, Ranson, Nguyen, and Link (1981) was implemented in the version provided to ATDL by the Environmental Laboratory, Waterways Experiment Station in the spring of 1981. This version includes routines GDIST1, which calculates the leaf angle frequency distribution for any of six preselected theoretical distribution functions, and SCALC which calculates the view angle matrix and the longwave transfer matrix from the leaf angle distribution. These matrices are required as inputs for TMODEL. The routines were implemented on a DEC model KL10 computer operated in time sharing mode with the programs being executed sequentially.

TMODEL was executed for a 72 hour simulation for a winter leafless forest. The dates for which the model was run were Jan 24-26, 1981. Meteorological

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conditions for the three days can be interpreted from Fig. 10, 11 and 13. Jan. 24, (Fig. 13) was a clear day with a high thin haze as seen by the slight ripple on the measured global radiation flux. Jan. 25 (Fig. 10) was a completely clear day and Jan. 26 (Fig. 11) was partly cloudy with heavier clouds in the morning than in the afternoon. The meteorological variables for the 72 hour period incorporated in the environmental state vector of TMODEL are shown in Figs. 14-17. Air temperature (Fig. 14) was measured at 44 m. The ground temperature had to be estimated since only the 3 m air and -0.5 m soil temperature were available because of undiagnosed thermistor failure. The ground temperature for the model was estimated by assuming

$$T_g = .8T_{.5} + .2\,T_3$$

where $T_{.5}$ = -0.5 m soil temperature.

T_3 = 3 m air temperature.

The estimated ground temperature is plotted in Fig. 14. The relative humidity (Fig. 15) was measured by a hair hygrograph situated in a cotton-region shelter at 1.5 m in the forest. The wind speed (Fig. 16) was measured at 44 m with a cup anemometer. The global shortwave radiation flux, measured at 44 m with an Eppley Laboratory model II precision spectral pyranometer, is presented as hourly averages in Fig. 17.

The model was executed using 0.28, 0.19, and 0.12 for the plant area index for layers 1 (above 15 m), 2 (between 7.5 m and 15 m), and 3 (from 0 to 7.5 m) respectively. The model was run assuming many branch angle distribution functions as well as the uniform, plagoiphile, and erectophile distributions indicated for these layers respectively by the data collected (Fig. 7). The model was found to be insensitive to the particular function chosen, probably

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because the plant area index is small in the winter leafless forest. Likewise, the model was insensitive to the grouping parameter, S, (an index of spatial dispersion), since the maximum difference between predicted temperatures was only .2° C when the model was run for S values of 0.1 and 1.0.

In running the model for winter conditions, the stomatal resistance was set to infinity since no leaves were present. The shortwave absorptivity was assumed to equal 1. Results using these assumptions are shown in Fig. 18, 19, and 20. Fig. 18 shows the air and ground input temperatures used to drive the model along with the surface temperatures predicted for layers 1, 2, and 3.

Figs. 19a, b, and c compare the predicted surface and measured air temperatures for layers 1, 2, and 3 respectively. Fig. 20 shows the deviation of mean predicted canopy temperature from the air temperature measured at 44 m. The predicted temperatures appear to follow the measured temperatures more closely on the last two days. We believe that this is the result of a cold front that passed through the area at about 1600 hrs on Jan 23. Thus, the actual temperature difference between the air and the ground surface was large for Jan. 24. As the air and soil surface temperatures equilibrated over the latter two days of the simulation period, estimated surface temperatures are in closer agreement with observed air temperatures.

TMODEL's performance is difficult to assess for this experimental period since no surface temperatures or layer temperatures were measured directly. These temperatures are more important for the winter leafless forest than the summer forest since there is less biomass (BAI = 0.6) to absorb radiation in the canopy layers and the transpiration term is zero. Thus, heat storage terms should be included for the forest leafless condition. This experiment will be repeated during the winter of 1982 with additional instrumentation to allow

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direct comparison of observed layer surface temperatures with predicted surface temperatures in these layers.

Summary.

The transfer of electromagnetic radiation in the mixed species deciduous forest was studied during the leafless state. Measured values of incoming and outgoing fluxes in the shortwave, photosynthetically active, and allwave wavebands are summarized in tables for clear, partly cloudy and overcast sky conditions. The flux density distribution for each hour was determined from 180 readings of each instrument. The mean, standard deviation, relative skewness, relative kurtosis, and maximum value are presented for each hour to allow comparison of the flux density frequency distribution to normal or other distribution functions. No attempt has been made to comprehensively interpret measured radiation data in this report.

Forest canopy structural data are presented for the fully leafed and leafless forest. The biomass inclination angle distribution (which in the summer is the leaf inclination angle and in the winter is the branch and bole inclination angle) changes from an extreme planophile distribution in the summer to a more uniform and slightly erectophile distribution in the leafless state. The total biomass area index changes from 5.5 to 0.6 from the summer to winter state.

The forest structure data for the winter leafless forest was used together with measurements of environmental variables to drive, TMODEL a thermal radiation vegatation canopy model. Differences between measured air temperatures and predicted layer biomass temperatures were generally less than 2° but were as large as 4° C for two hours during a clear day

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after passage of a cold front. Direct comparison of measured layer surface temperature to predicted surface temperature was not possible since surface temperatures were not monitored. Surface layer temperatures are currently being measured in the winter leafless forest. Thus, a direct comparison will be forthcoming.

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Acknowledgements.

We wish to acknowledge the assistance of Dr. S. J. Tajchman and Carol Moody in the LAI measurements and Judy Trimble, Joel Bohannon and Jackie Gholston in woody biomass measurements. Special thanks are due Dr. J. M. Norman for help with indirect measurement of PAI and Russ Martin for assistance in PAI measurements, data reduction and figure preparations. This work was supported in part by the U.S. Army Corps of Engineers, Waterways Experiment Station (Waterways Expt. Sta. Order No. WES-80-49, Interagency Agreement DOE NO. 40-766-80) and by use of U.S. Department of Energy research facilities.

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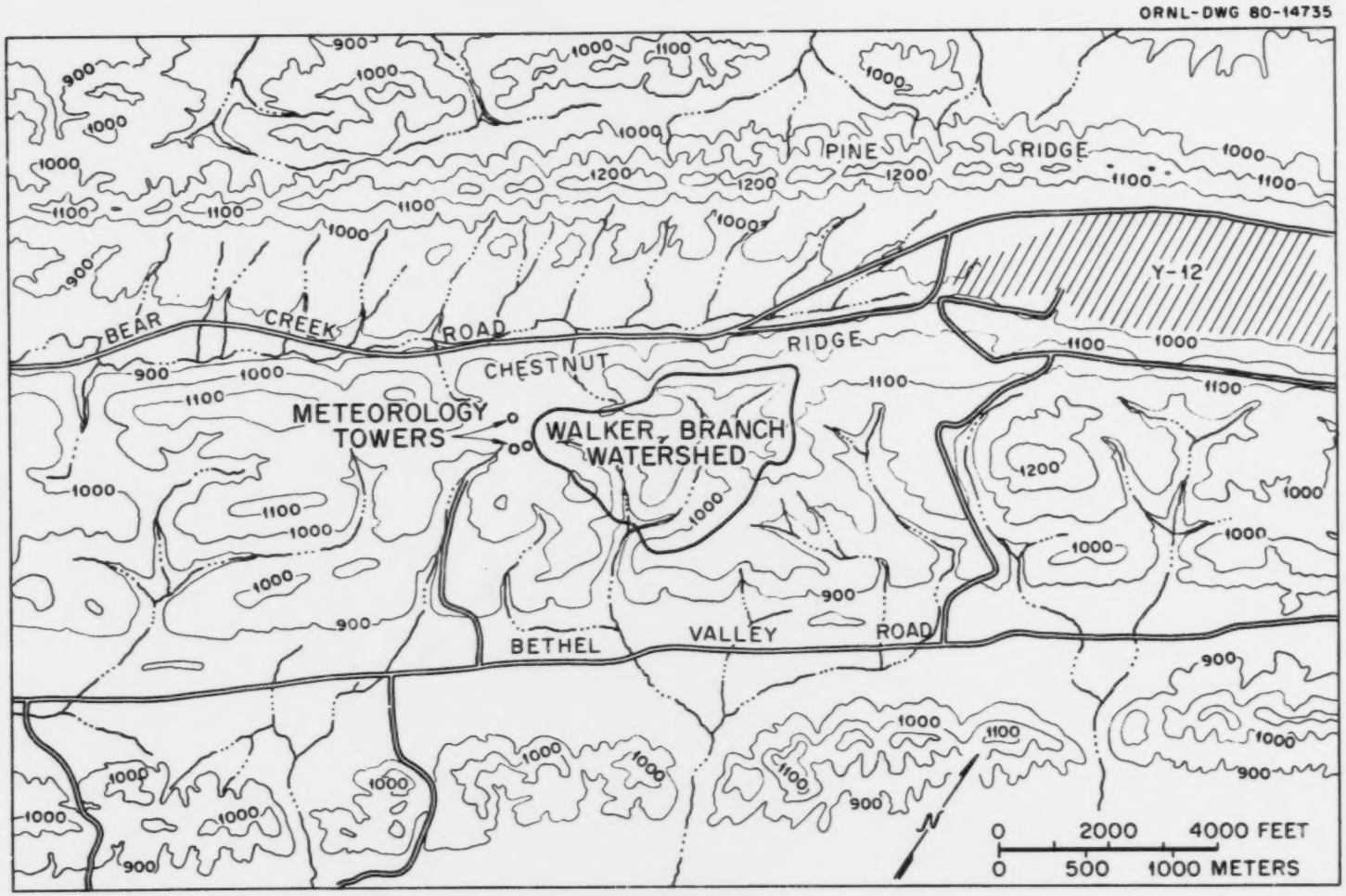

Fig. 1. Contour map showing location of forest meteorology research facility adjacent to the Walker Branch Wateshed, on the USDOE Oak Ridge Reservation.

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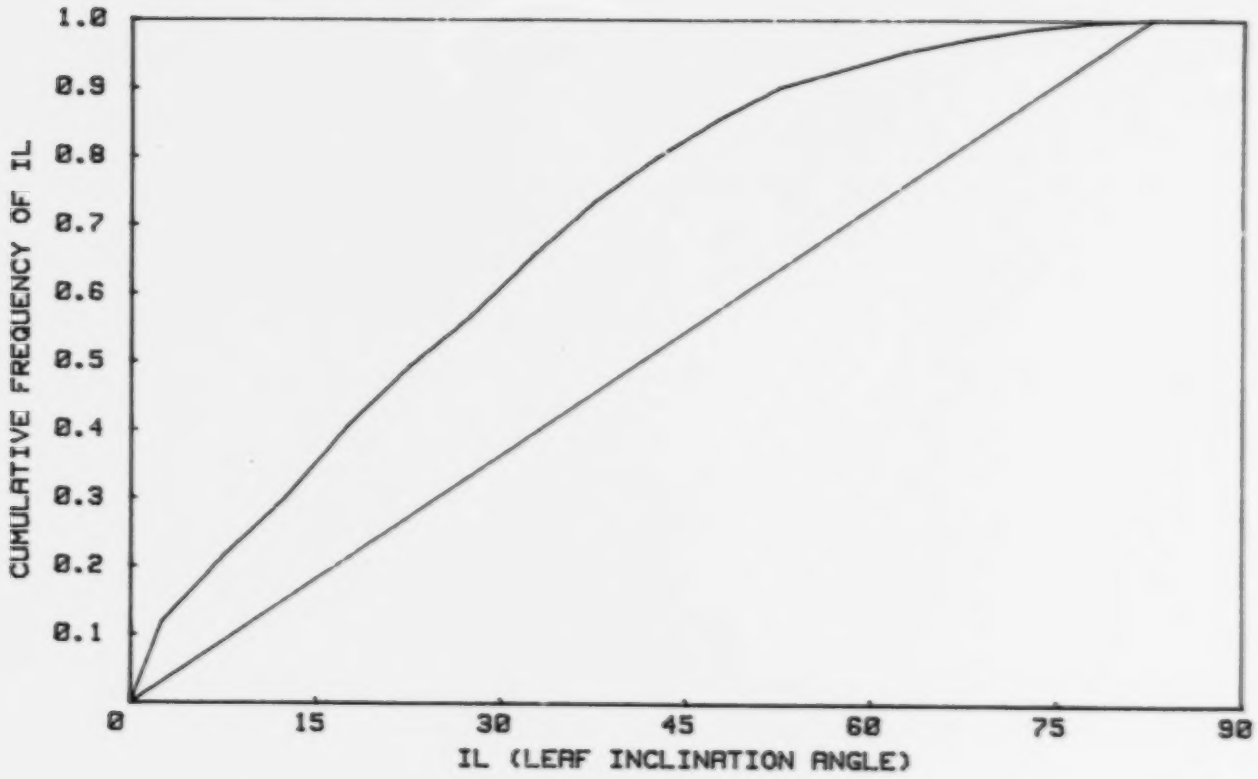

Fig. 2. Vertical distribution of leaf inclination angles in the summer fully leafed forest.

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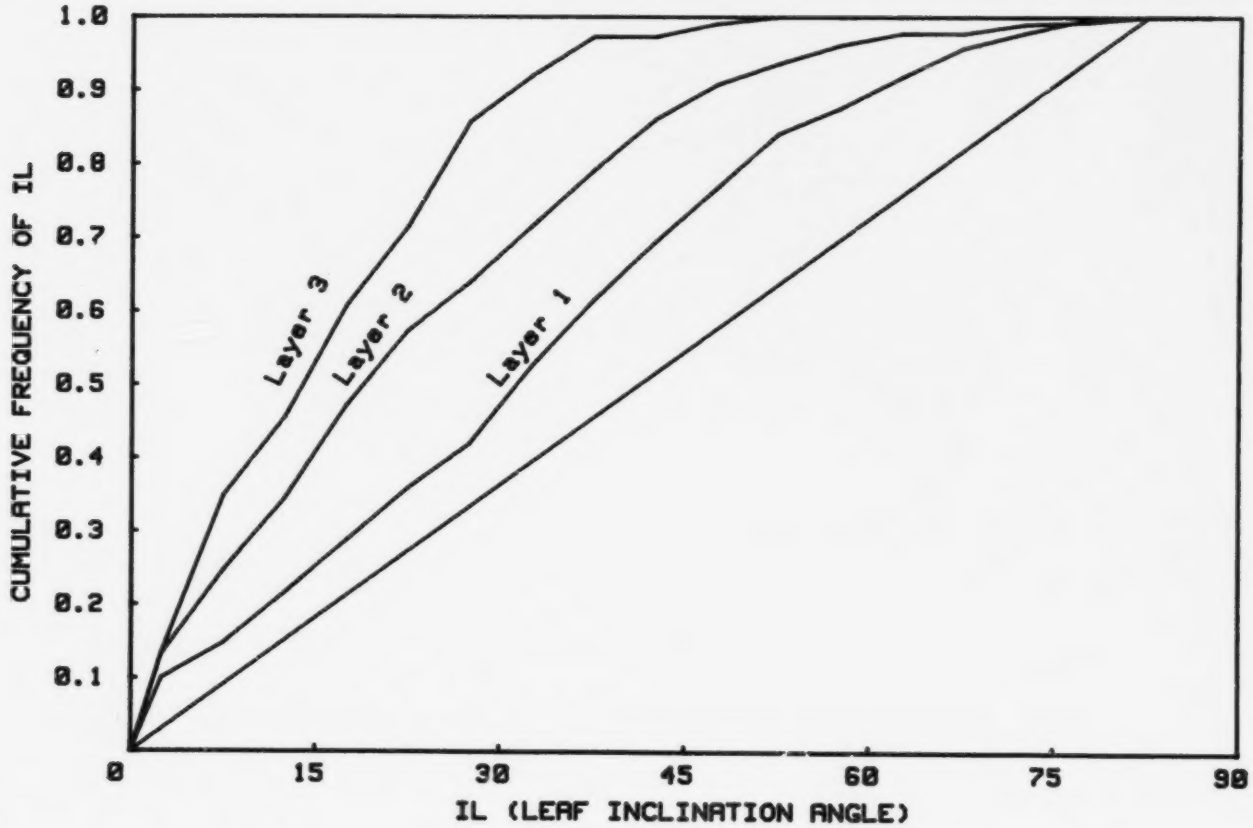

Fig. 3. Cumulative frequency of leaf inclination angles by layer for the summer fully leafed forest.

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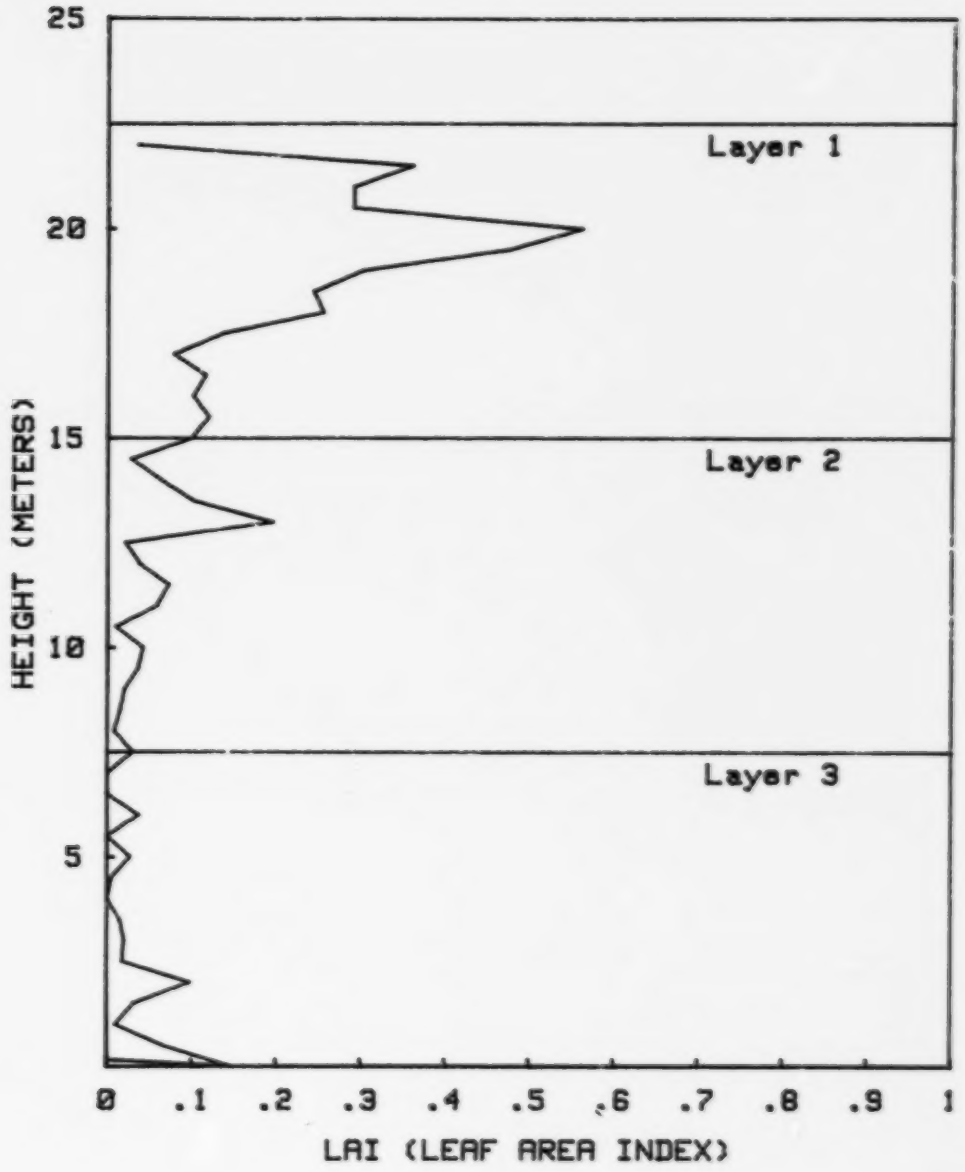

Fig. 4. Vertical distribution of leaf area index for the summer fully leafed forest.

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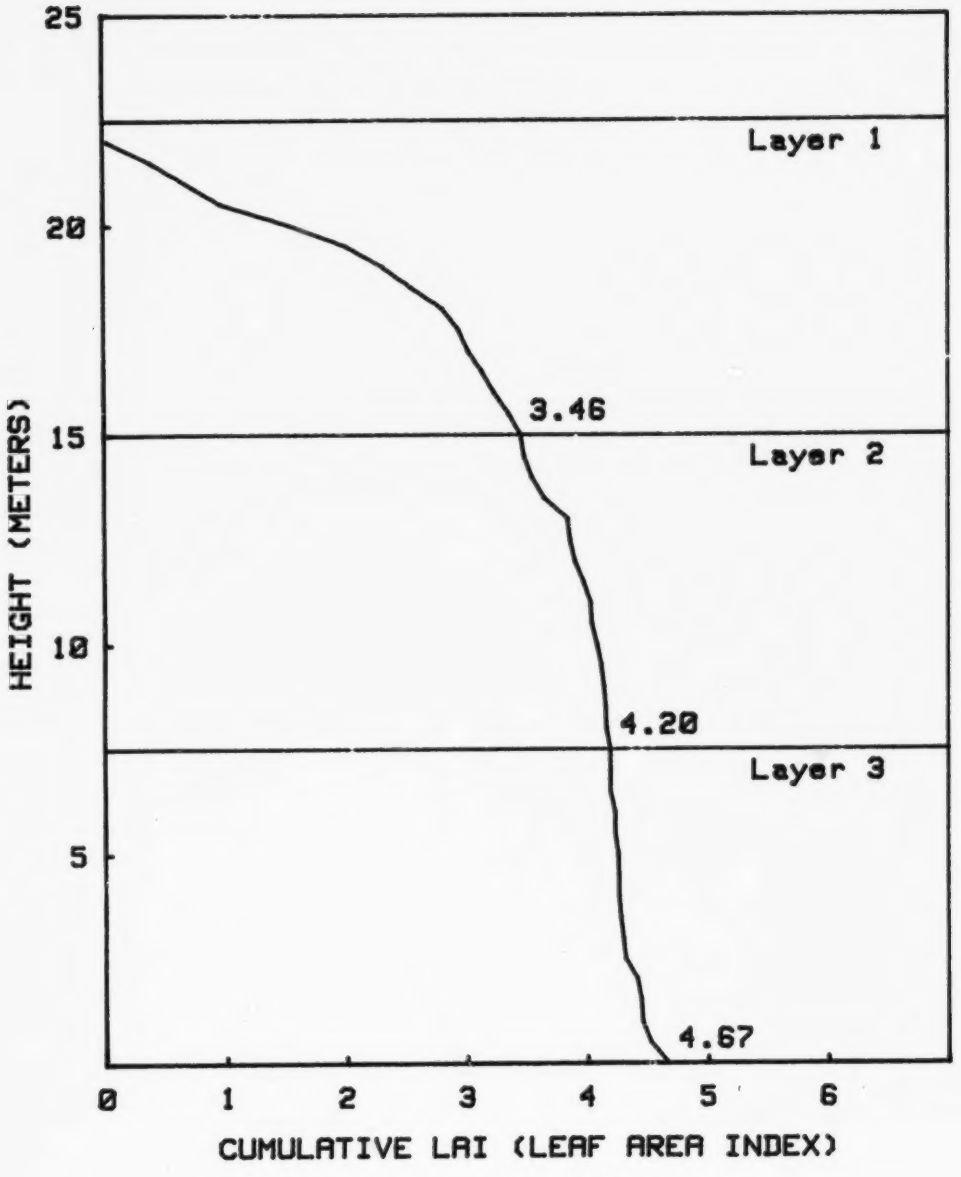

Fig. 5. Cumulative leaf area index for the summer fully leafed forest.

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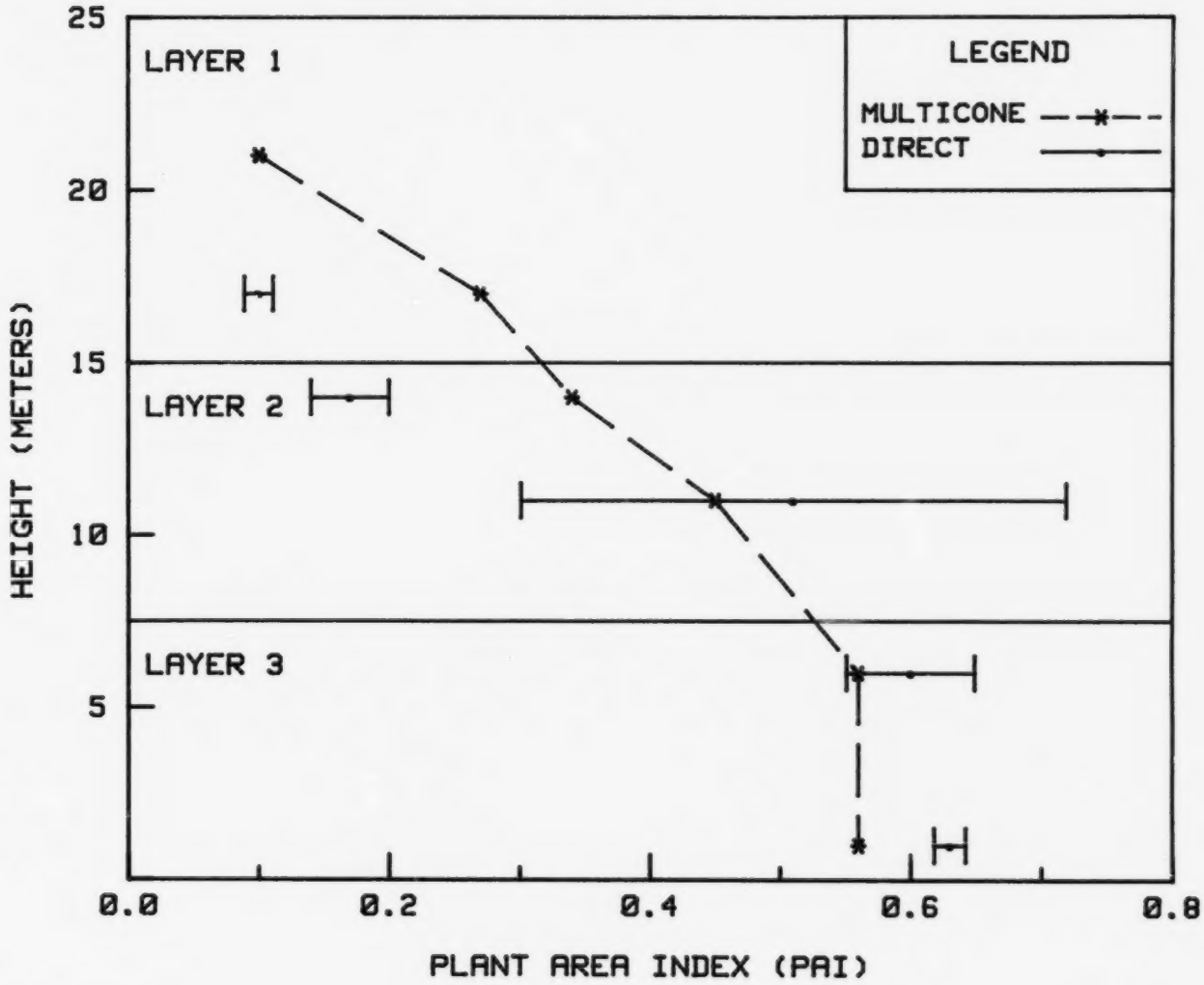

Fig. 6. Plant area index (PAI) for the winter leafless forest.

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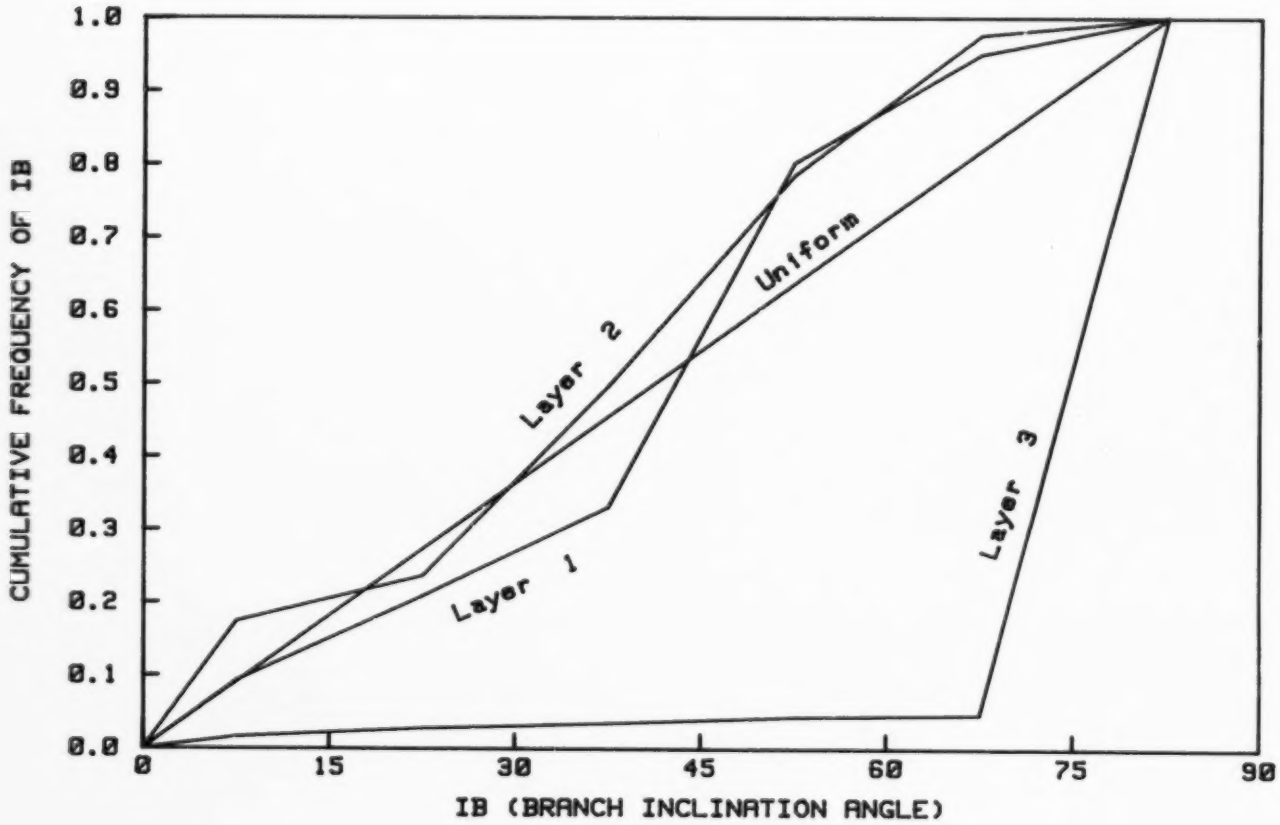

Fig. 7. Branch and bole inclination angle distribution.

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Fig. 8. ATDL forest meteorology radiation research facility.

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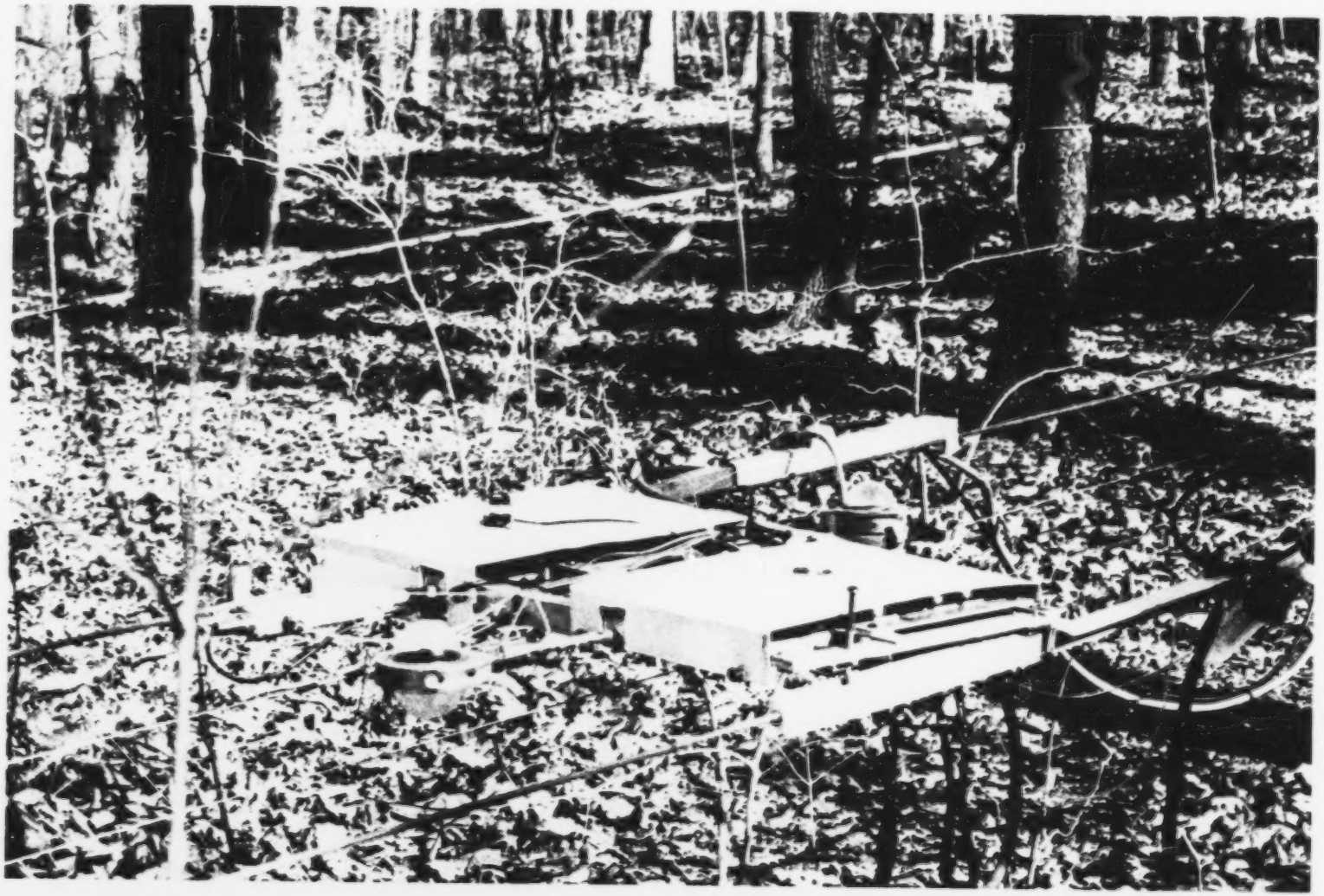

Fig. 9. Typical instrument tram used in measuring radiant fluxes within and above the forest.

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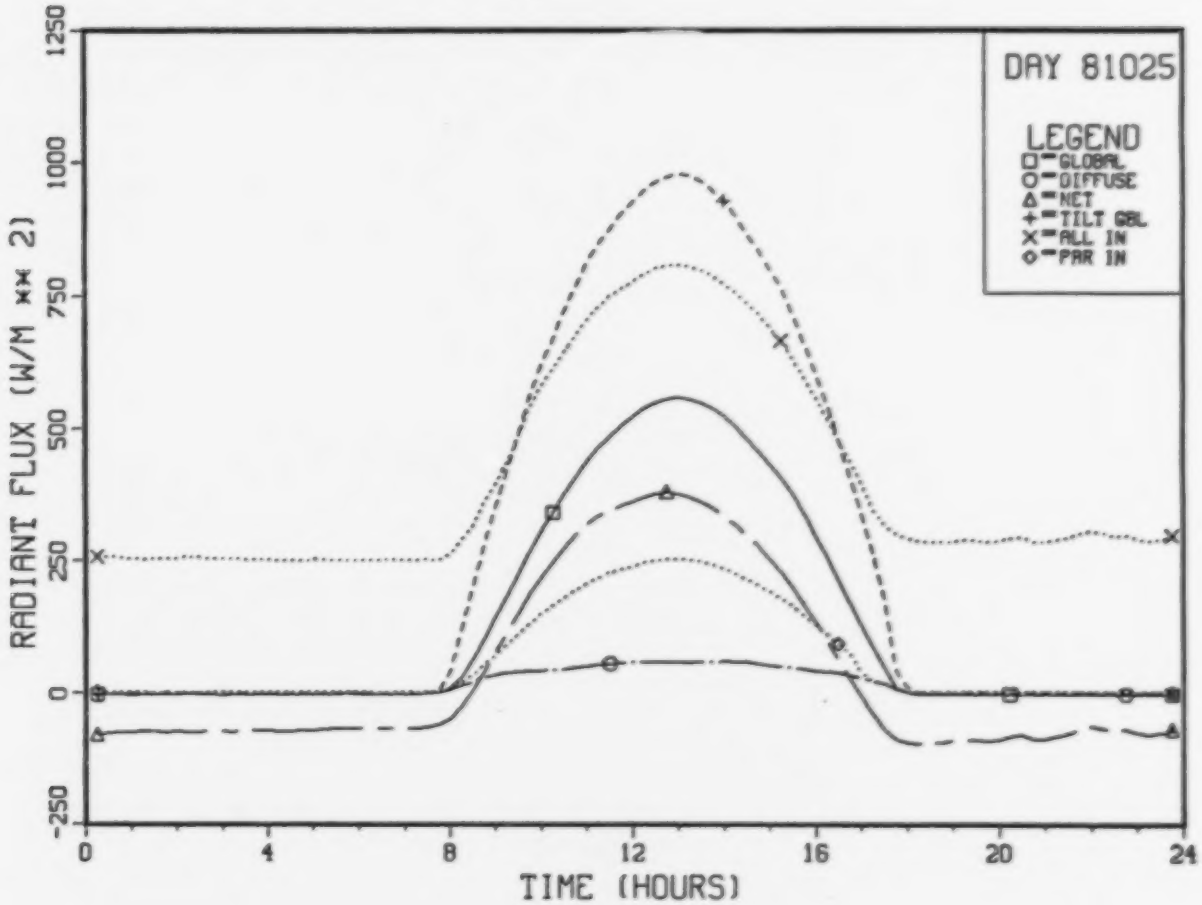

Fig. 10. Incident radiation fluxes on a clear day, Jan. 25, 1981.

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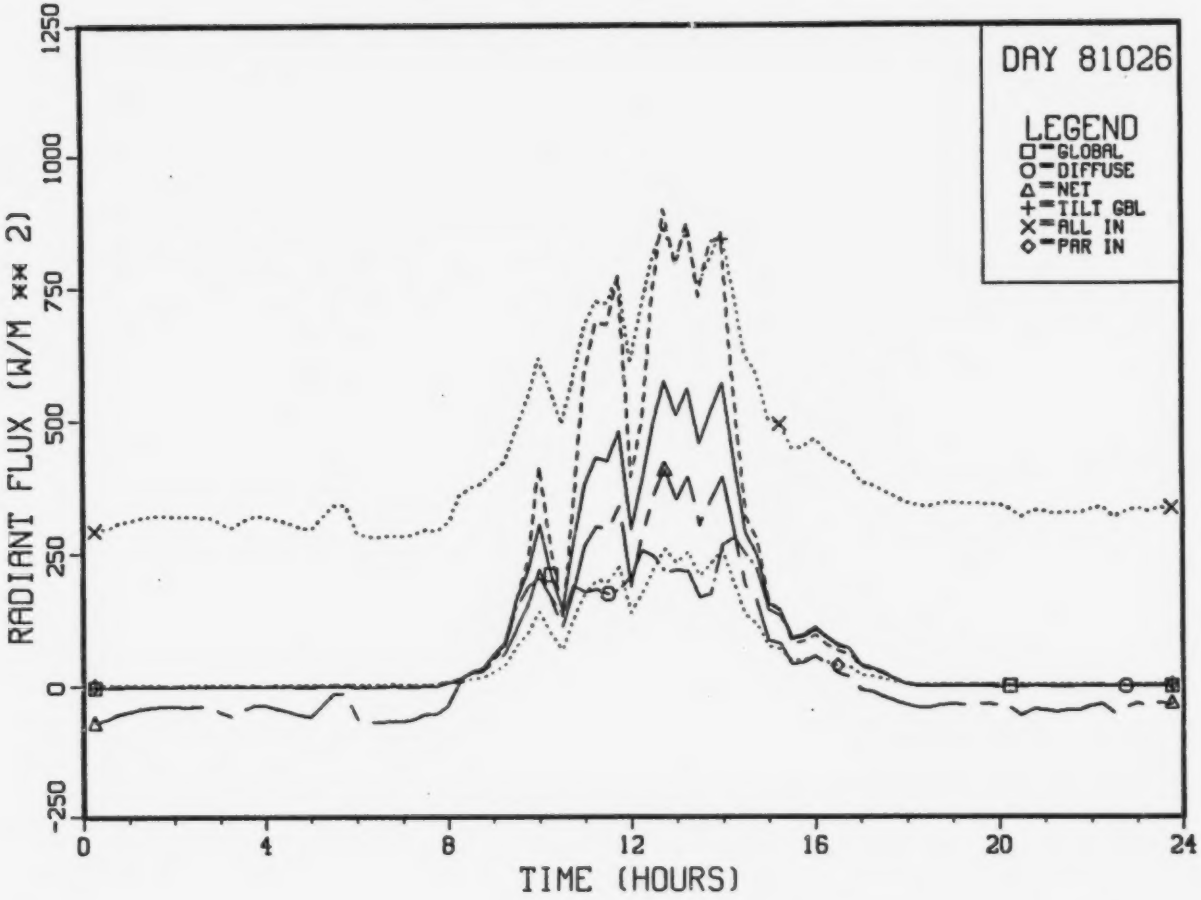

Fig. 11. Incident radiation fluxes on a partly cloudy day, Jan. 26, 198[illegible].

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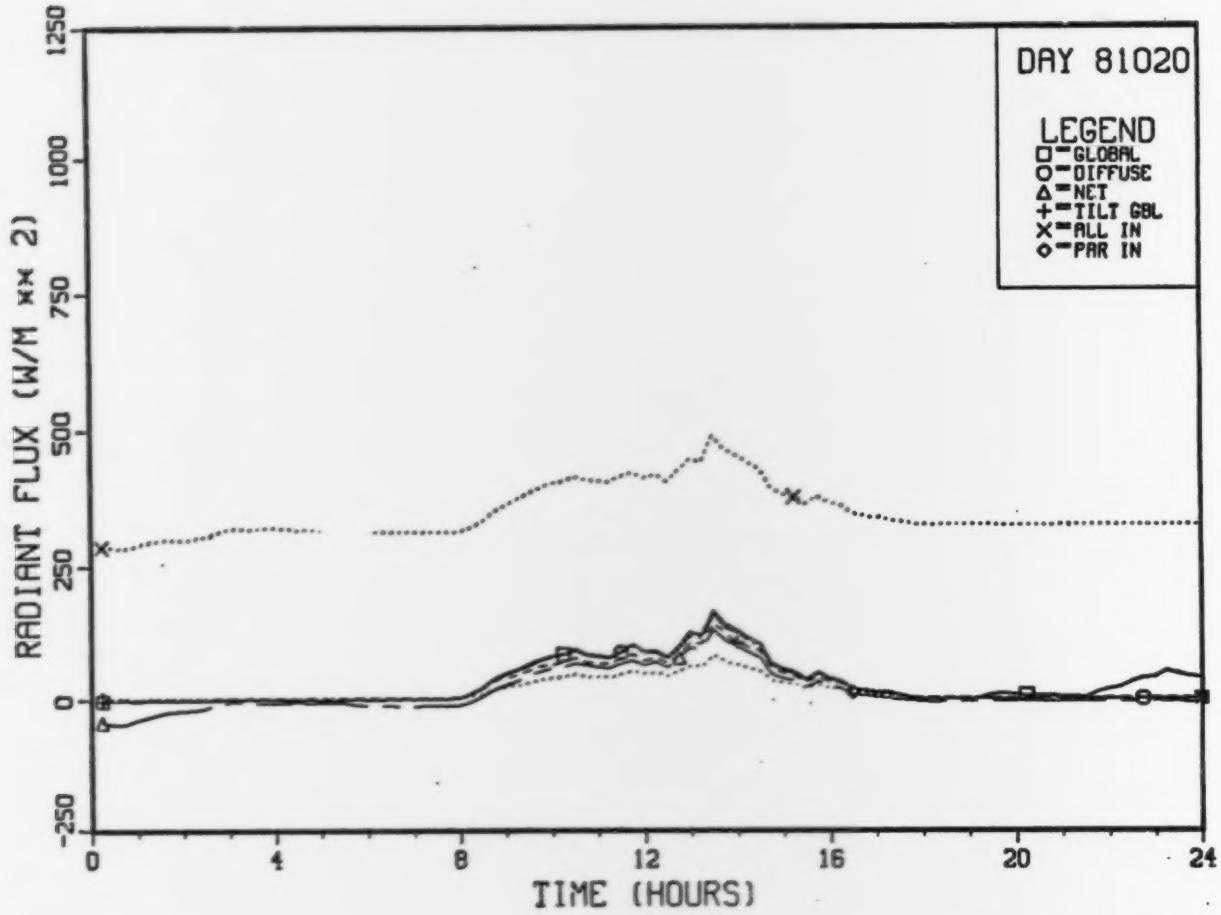

Fig. 12. Incident radiation fluxes for an overcast day, Jan. 20, 1981.

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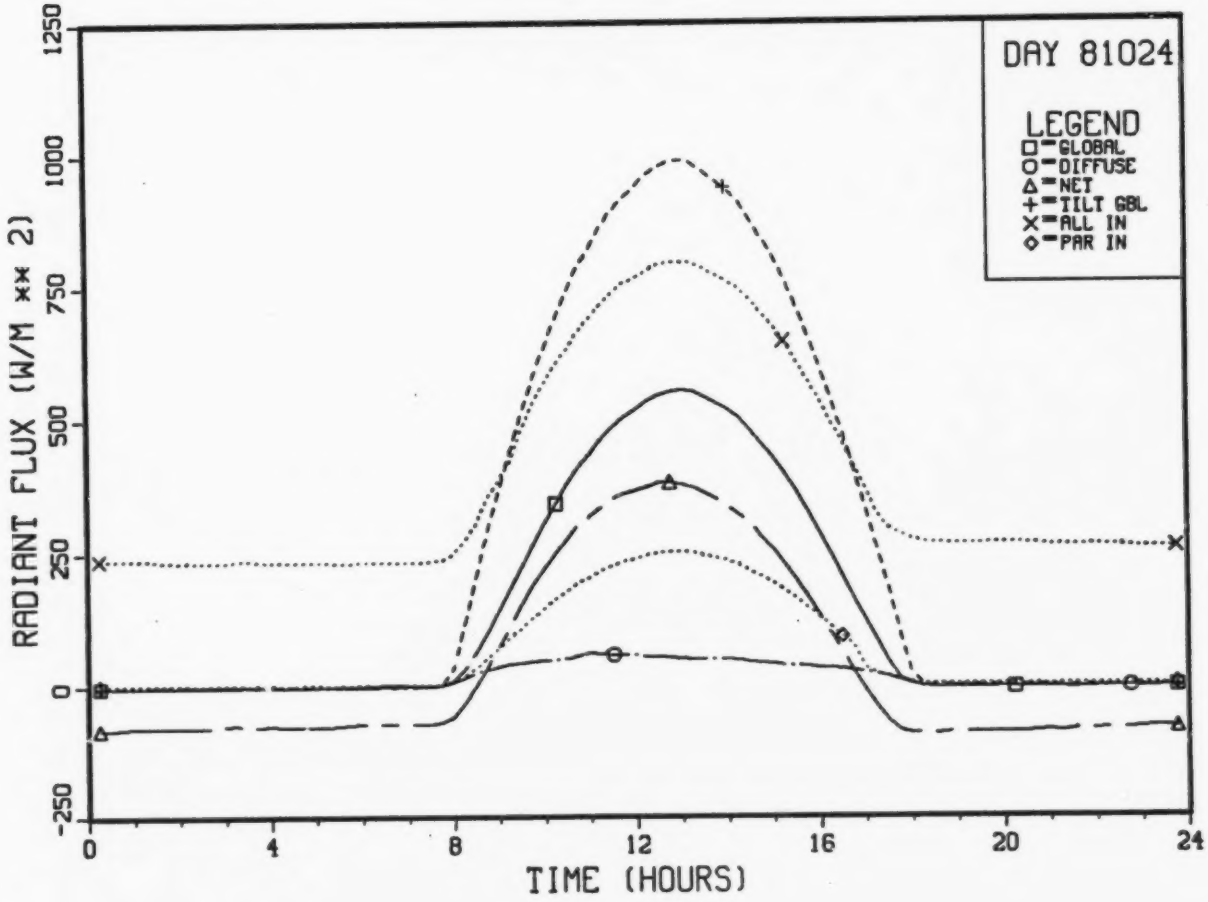

Fig. 13. Incident radiation fluxes on Jan. 24, 1981.

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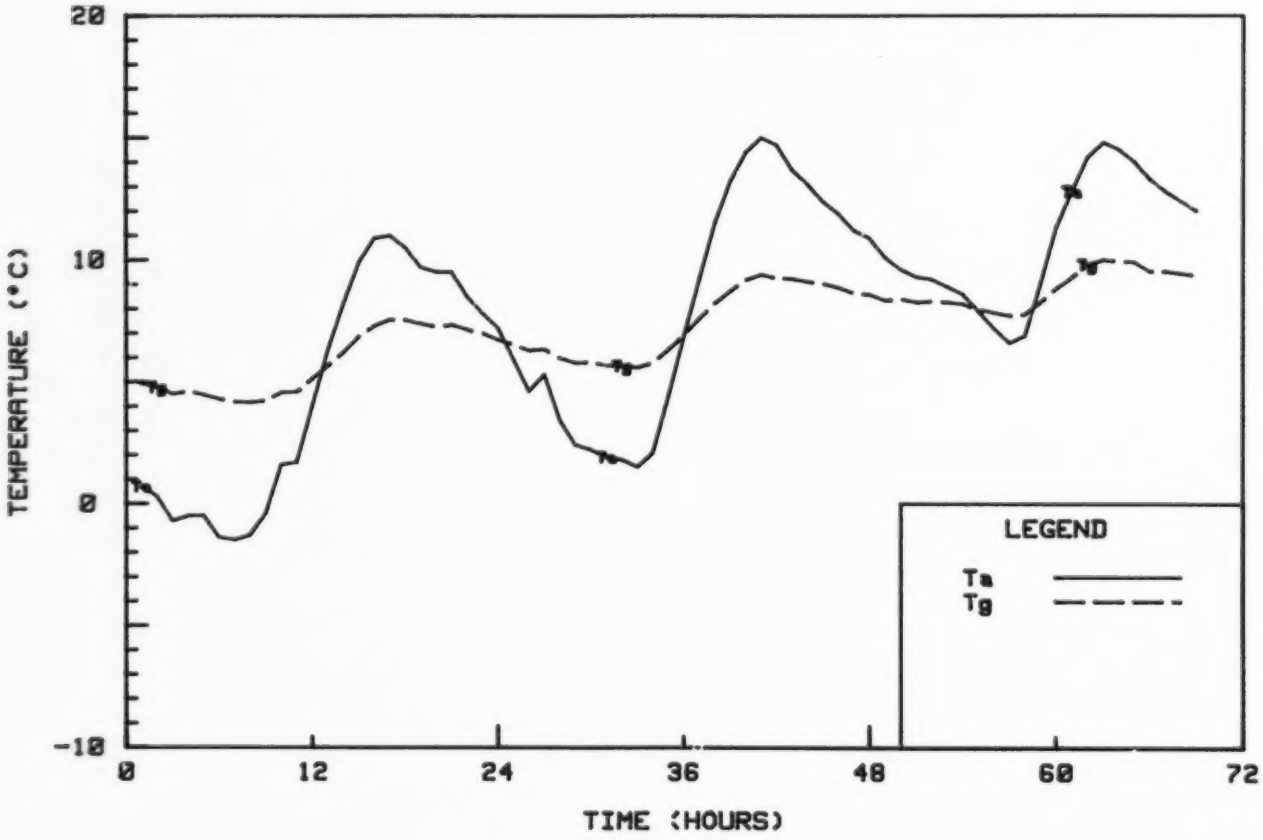

Fig. 14. Comparison of air and ground temperatures during the Jan. 24-26 simulation period.

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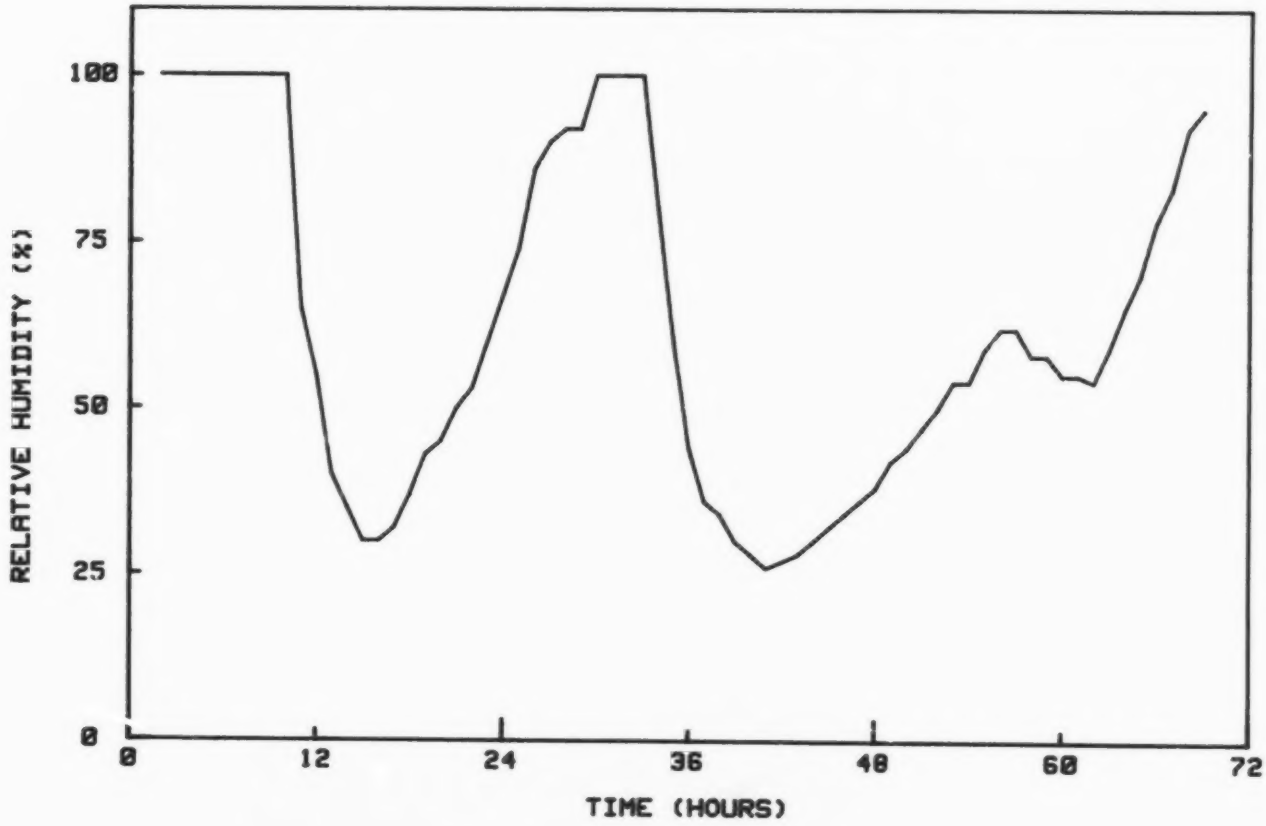

Fig. 15. Relative humidity during the Jan. 24-26 simulation period.

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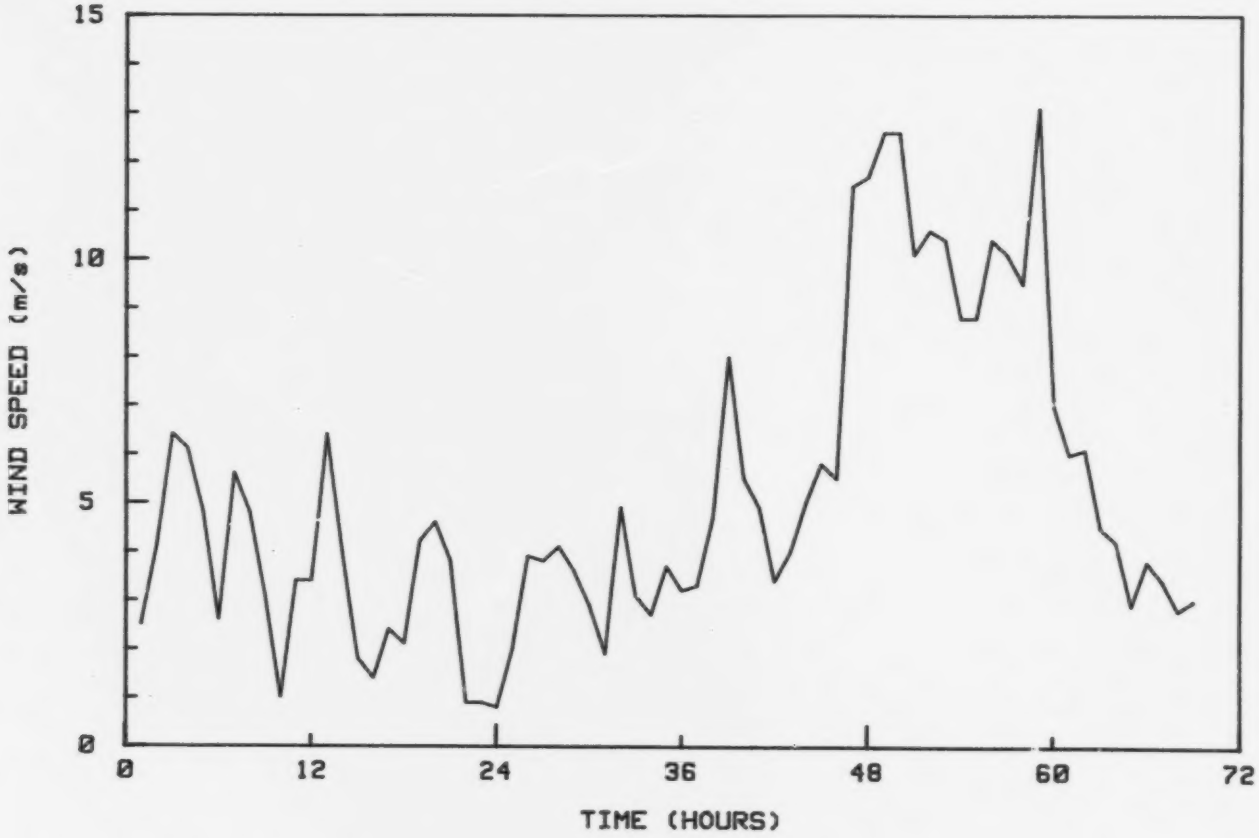

Fig. 16. Wind speed during the Jan. 24-26 simulation period.

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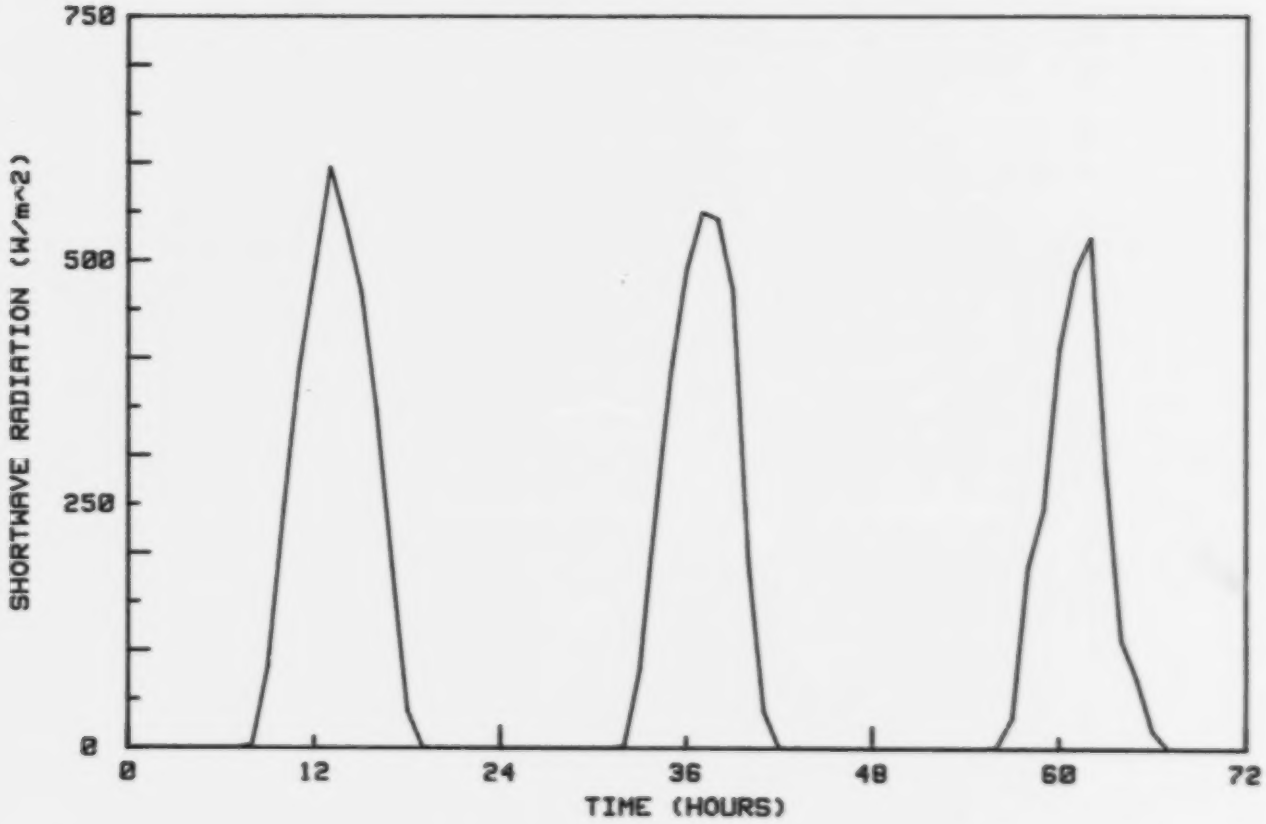

Fig. 17. Incident global shortwave radiant flux during the Jan. 24-26 simulation period.

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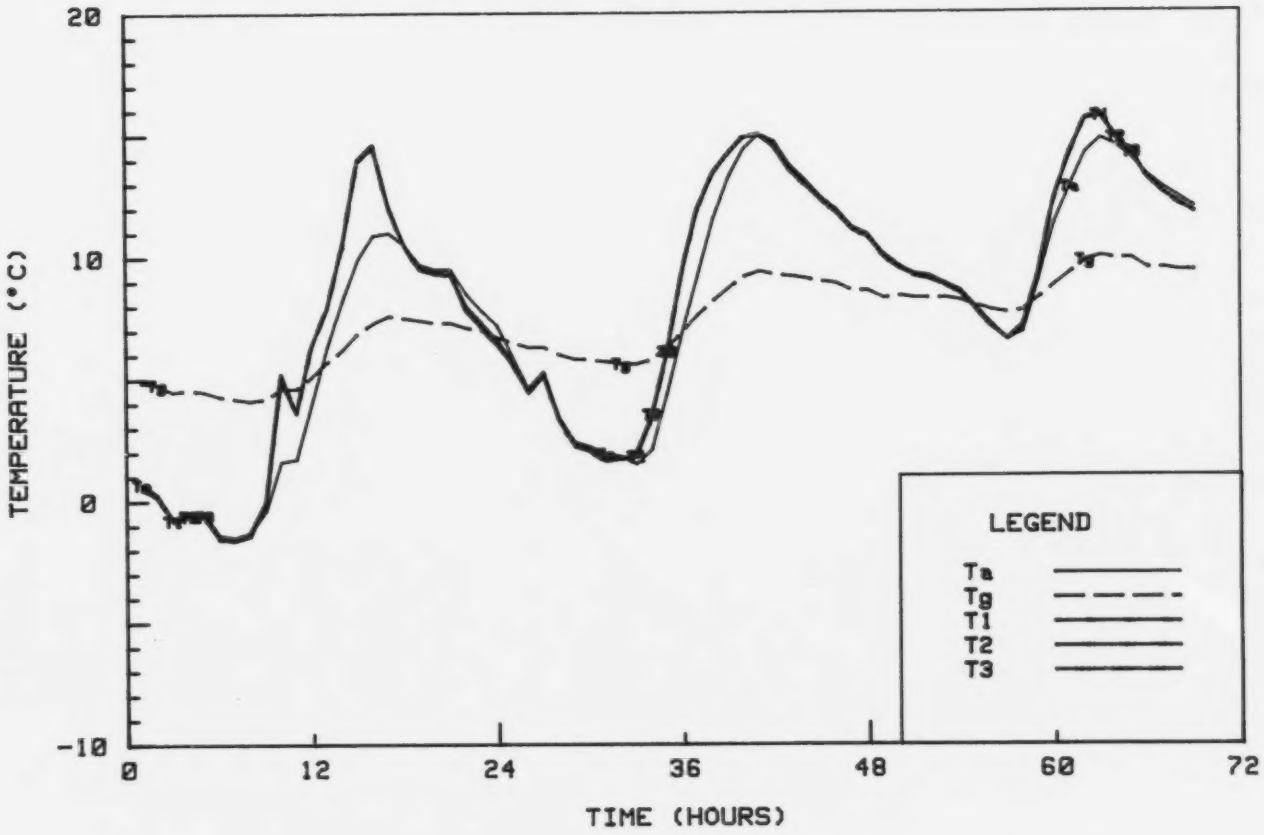

Fig. 18. Comparison of input air and ground temperatures and the TMODEL predicted layer surface temperatures.

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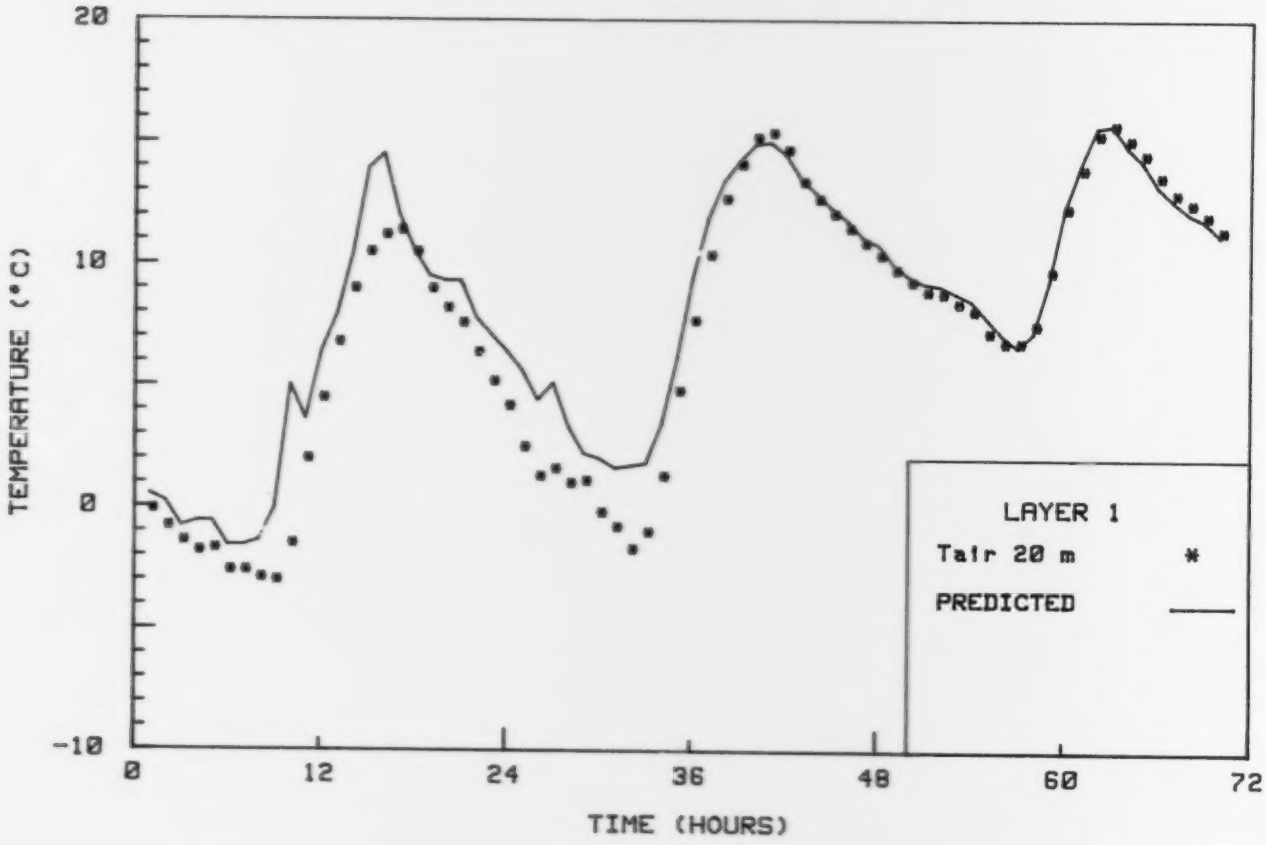

Fig. 19. Comparison of predicted layer surface temperatures and measured air temperatures.

(a) layer 1

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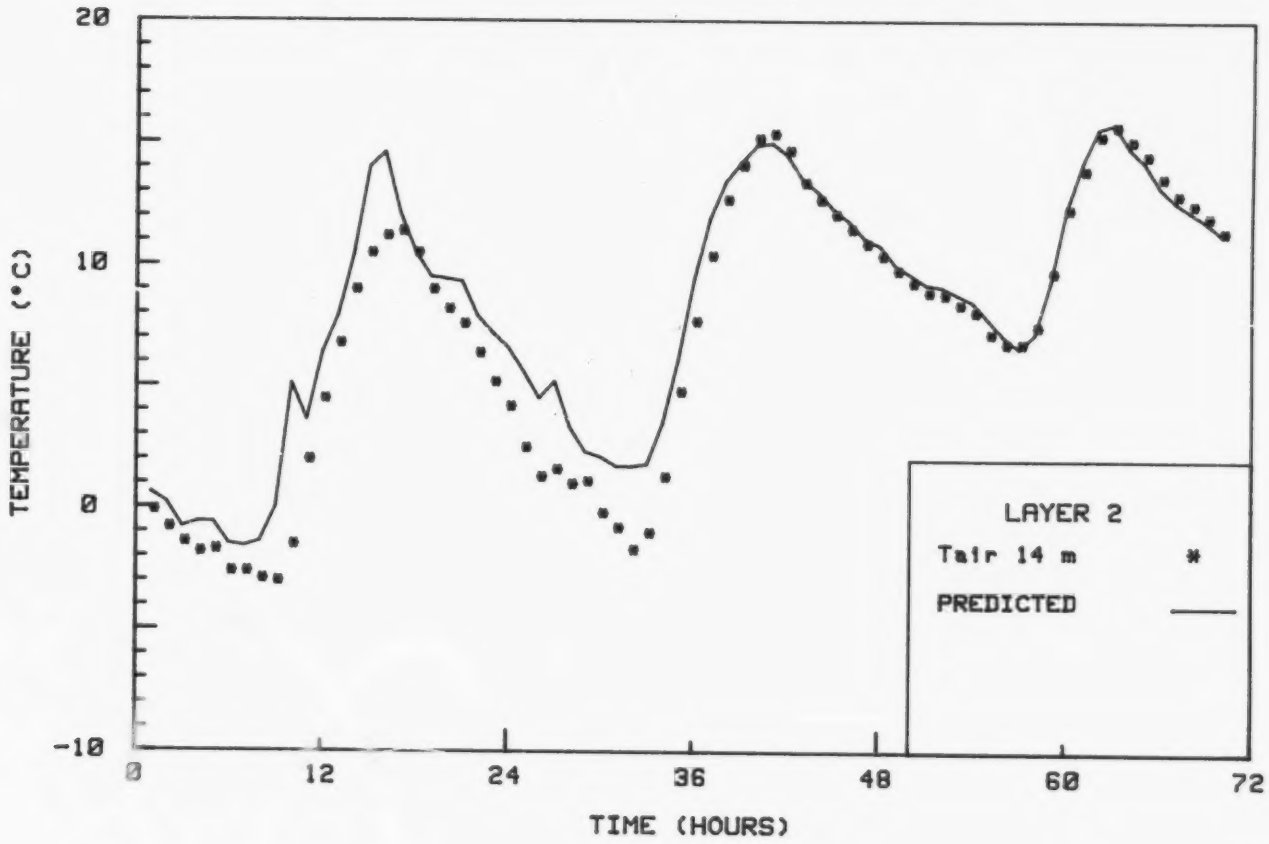

(b) layer 2

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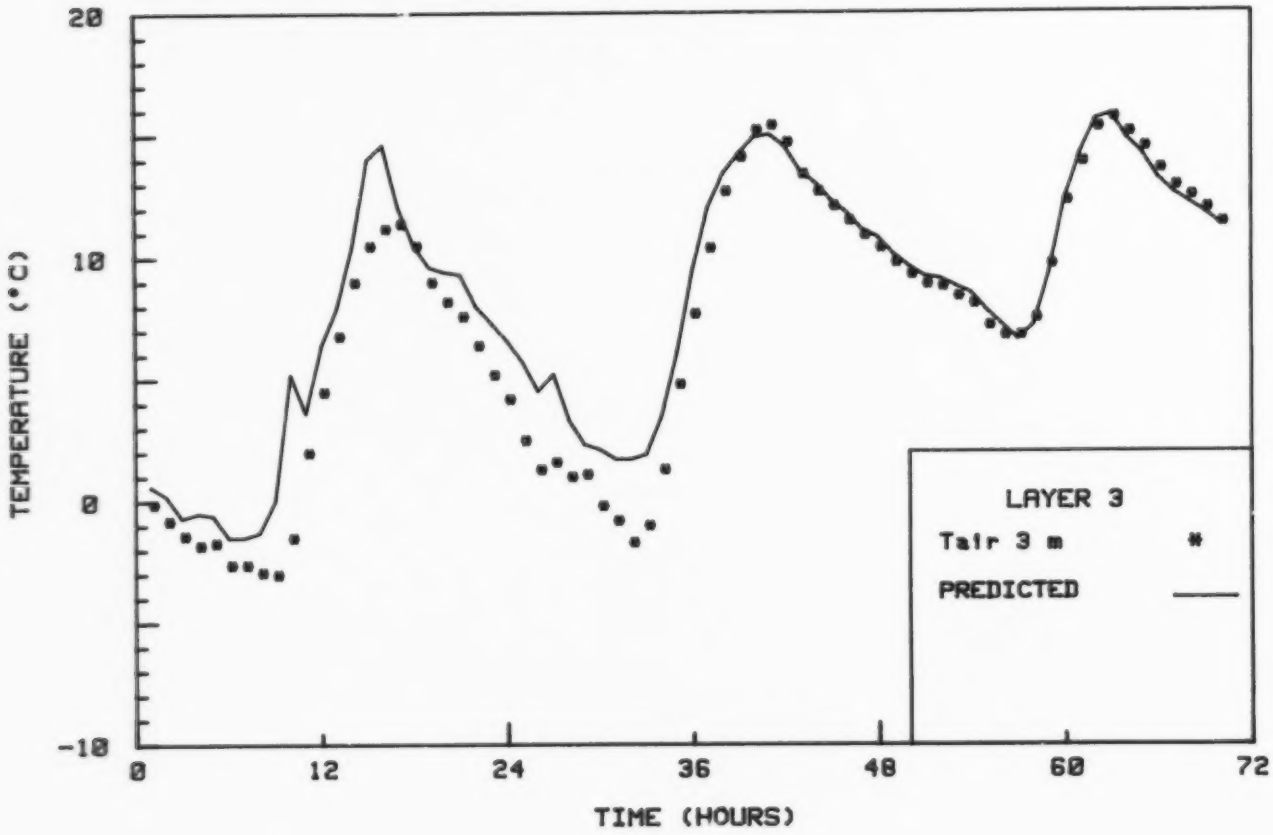

(c) layer 3

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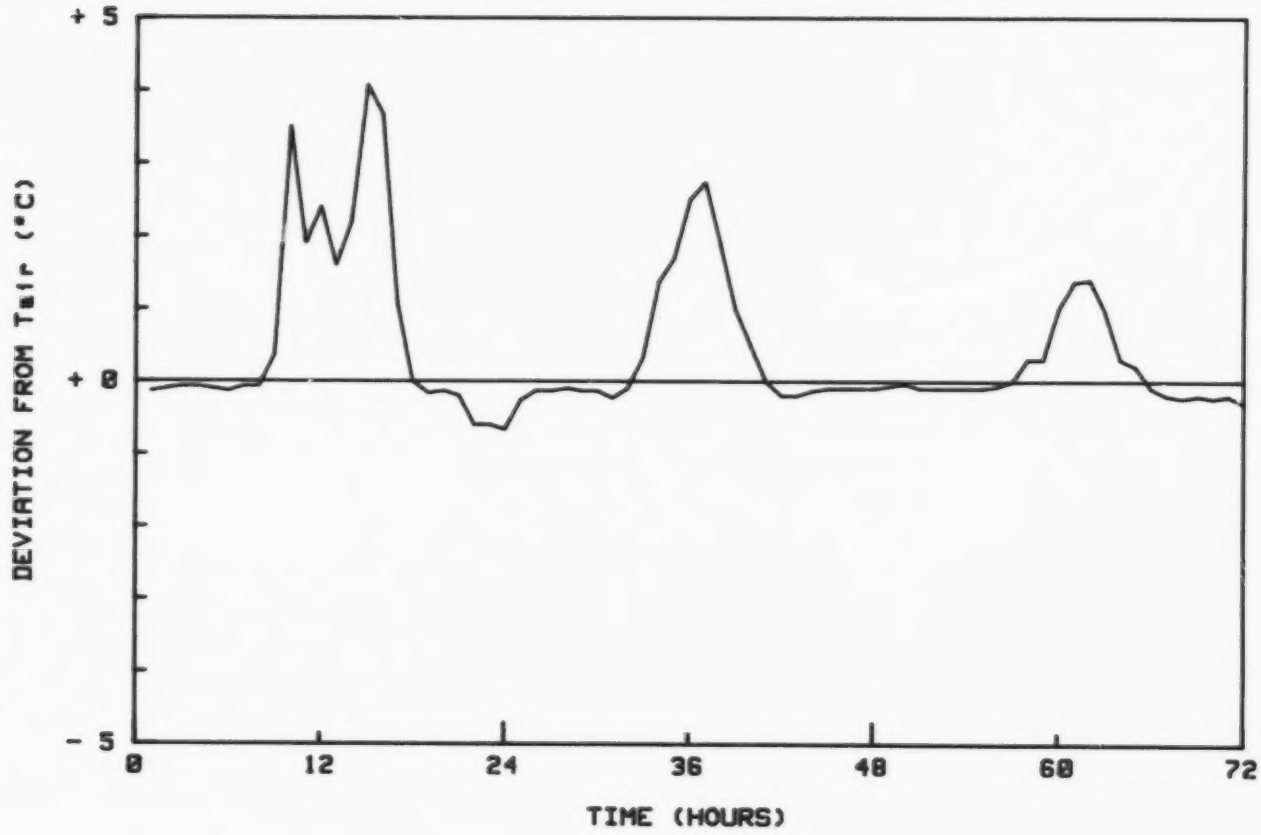

Fig. 20. Deviation of mean predicted canopy surface temperature from measured 44 m air temperature.

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Appendix:

Shortwave radiation (.285-2.85 μm) fluxes are presented in Table IA, photosynthetically active fluxes (.4-.7 μm) in Table IIA, and allwave fluxes (.3-60.0 μm) in Table IIIA. Radiant fluxes are given in W m^{-2} and all times presented are EST. The tables present the radiation fluxes and their statistics for the hour preceeding the time listed. The first column, labeled HOUR, is the time. For each hour, the line labeled IN refers to incoming fluxes while the line labeled OUT refers to outgoing fluxes. Column headings for TABLE I are defined by

GBL - shortwave global radiant flux

STD - standard deviation of GBL

SKEW - relative skewness of GBL

KUR - relative kurtosis of GBL

MAX - maximum value of GBL

DIF - diffuse shortwave radiant flux.

In TABLE IIA, PAR is the photosynthetically active radiant flux and all statistics refer to that flux while in TABLE III, ALL is the allwave radiant flux and all statistics refer to that flux.

Data are presented for day 81025 (Jan. 25, 1981) which was a clear day as shown in Fig. 10. Day 81026 (Jan. 26, 1981) was a partly cloudy as shown in Fig. 11. Day 81020 (Jan. 20, 1981) was an overcast day as shown in Fig. 20 with rain beginning at 1600 hrs.

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Table I

Shortwave global radiant fluxes and their statistics by hour and level in the forest.

(a) clear day

DAY = 81025

		1 METER						6 METER					
HOUR		GBL	STD	SKEW	KUR	MAX	DIF	GBL	STD	SKEW	KUR	MAX	DIF
8	IN	2	2	1.45	1.14	7	.	2	2	1.67	2.28	10	.
	OUT	2	1	0.81	-0.45	3		4	1	0.58	0.32	9	
9	IN	20	11	0.82	0.02	47	.	21	11	0.76	-0.13	48	.
	OUT	6	3	0.83	0.01	12		8	3	0.46	-0.39	16	
10	IN	108	44	0.20	-0.27	235	.	109	45	0.18	-0.63	215	.
	OUT	27	11	0.18	-0.77	53		29	11	0.25	-0.59	55	
11	IN	146	66	0.77	-0.50	319	120	142	60	0.83	-0.19	301	120
	OUT	36	17	0.51	-1.21	71		36	14	0.45	-1.13	70	
12	IN	230	79	0.64	-0.25	473	154	227	74	0.63	-0.25	452	155
	OUT	57	17	0.30	-0.28	108		57	14	-0.54	-0.91	80	
13	IN	300	106	0.21	-1.09	583	141	282	92	0.22	-0.94	484	142
	OUT	76	24	-0.32	-0.95	130		72	20	-0.61	-1.01	103	
14	IN	294	86	-0.03	-0.56	503	141	287	82	-0.16	-0.67	488	142
	OUT	79	20	-0.89	1.13	118		76	16	-1.27	1.51	99	
15	IN	166	66	1.03	1.62	403	68	173	79	1.49	3.06	474	69
	OUT	42	18	1.12	1.37	104		43	18	1.19	1.29	99	
16	IN	67	16	0.21	-1.26	99	45	69	16	0.14	-1.28	101	46
	OUT	17	4	0.26	-1.20	25		19	4	0.14	-0.86	28	
17	IN	43	14	-0.40	-0.74	69	17	44	14	-0.44	-0.75	67	17
	OUT	11	3	-0.31	-0.31	20		14	3	-0.03	-0.59	21	
18	IN	12	8	0.78	0.11	32	7	12	8	0.76	0.05	35	7
	OUT	5	2	0.29	-0.50	9		7	2	0.26	-0.75	12	

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DAY = 81025

HOUR		10 METER GBL	STD	SKEW	KUR	MAX	DIF	14 METER GBL	STD	SKEW	KUR	MAX	DIF
8	IN	1	2	1.70	2.07	10	.	4	3	1.19	0.82	13	.
	OUT	2	1	0.85	2.34	12		6	1	0.48	1.39	12	
9	IN	23	12	0.85	0.09	54	.	27	13	0.64	-0.35	57	.
	OUT	6	3	0.73	-0.15	18		10	3	0.38	-0.46	18	
10	IN	119	49	0.26	-0.28	248	.	129	52	0.10	-0.74	246	.
	OUT	26	11	0.13	-0.78	52		30	11	0.09	-0.81	52	
11	IN	161	71	0.68	-0.66	365	129	170	67	0.45	-1.24	322	135
	OUT	33	14	0.43	-1.27	63		37	13	0.38	-1.34	63	
12	IN	252	88	0.63	-0.52	476	165	284	78	-0.02	-0.65	474	172
	OUT	54	14	-0.60	-0.88	84		58	14	-0.52	-0.60	84	
13	IN	296	89	0.43	-0.34	554	149	346	108	0.02	-0.99	603	156
	OUT	69	19	-0.58	-0.93	105		70	20	-0.54	-0.97	105	
14	IN	324	92	-0.28	-0.58	509	154	378	94	-0.44	-0.25	559	162
	OUT	72	16	-1.58	3.10	97		74	16	-1.47	3.22	97	
15	IN	187	77	1.07	1.60	463	74	216	101	1.35	1.67	529	78
	OUT	40	18	1.20	1.38	105		45	18	1.24	1.32	105	
16	IN	75	17	0.23	-1.18	112	51	84	18	0.09	-1.17	123	52
	OUT	16	3	0.08	-1.29	30		20	4	-0.06	-0.71	30	
17	IN	48	16	-0.38	-0.69	77	19	55	15	-0.38	-0.64	86	17
	OUT	11	3	-0.05	-0.15	22		15	3	-0.27	0.58	22	
18	IN	13	9	0.75	0.00	36	7	18	9	0.69	0.10	45	6
	OUT	4	2	0.83	0.40	15		9	2	0.26	-0.54	15	

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DAY = 81025

HOUR		17 METER GBL	STD	SKEW	KUR	MAX	DIF	21 METER GBL	STD	SKEW	KUR	MAX	DIF
8	IN	5	3	1.18	0.73	14	.	2	3	1.83	2.10	10	.
	OUT	2	1	0.18	0.71	8		5	1	0.27	0.25	8	
9	IN	28	14	0.75	-0.05	62	.	30	16	0.72	-0.16	73	.
	OUT	6	2	0.83	0.30	15		8	2	0.59	-0.23	15	
10	IN	143	61	0.17	-0.70	286	.	182	83	0.25	-0.77	369	.
	OUT	24	10	0.19	-0.78	54		27	11	0.29	-0.68	54	
11	IN	192	80	0.45	-1.05	395	152	235	105	0.30	-1.38	477	190
	OUT	32	14	0.33	-1.44	61		34	13	0.35	-1.41	61	
12	IN	315	88	0.05	-0.64	515	189	397	93	-0.51	-0.75	560	240
	OUT	52	13	-0.51	-0.64	77		54	13	-0.61	-0.58	77	
13	IN	372	116	0.03	-1.18	604	174	470	130	-0.42	-0.99	719	217
	OUT	64	18	-0.53	-1.07	91		65	18	-0.52	-1.06	91	
14	IN	408	100	-0.22	-0.49	606	177	513	102	-1.08	1.04	681	224
	OUT	68	15	-1.34	2.71	95		69	15	-1.39	2.91	95	
15	IN	226	90	1.02	1.63	593	86	280	114	0.98	0.88	639	107
	OUT	39	16	1.12	1.29	90		40	16	1.19	1.16	90	
16	IN	89	18	-0.04	-1.35	121	58	109	25	0.18	-1.34	156	71
	OUT	16	3	0.03	-1.39	24		18	3	0.02	-0.83	24	
17	IN	60	18	-0.18	-0.61	99	20	70	21	-0.45	-0.66	109	24
	OUT	10	3	-0.39	0.68	20		14	3	-0.54	0.84	20	
18	IN	19	10	0.45	-0.49	43	7	19	13	0.56	-0.37	49	7
	OUT	5	2	0.57	-0.04	14		8	2	0.24	-0.47	14	

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DAY = 81025

		26 METER						33 METER					
HOUR		GBL	STD	SKEW	KUR	MAX	DIF	GBL	STD	SKEW	KUR	MAX	DIF
8	IN	2	3	1.92	3.12	16	.	2	3	1.81	2.04	12	.
	OUT	19	2	-0.35	-0.47	24		2	1	0.36	1.56	5	
9	IN	33	18	0.72	-0.20	76	.	33	18	0.72	-0.14	78	.
	OUT	23	3	0.41	-0.09	31		6	2	0.96	0.85	14	
10	IN	194	86	0.20	-0.79	385	.	189	82	0.14	-0.84	365	.
	OUT	44	12	0.32	-0.55	75		26	11	0.33	-0.61	54	
11	IN	261	112	0.29	-1.50	476	194	249	102	0.29	-1.48	445	.
	OUT	53	15	0.33	-1.45	81		35	15	0.39	-1.42	67	
12	IN	434	99	-0.67	-0.49	607	240	402	88	-0.68	-0.45	554	.
	OUT	76	15	-0.63	-0.52	102		58	14	-0.71	-0.44	82	
13	IN	505	136	-0.53	-1.00	731	215	468	119	-0.55	-0.97	664	.
	OUT	86	20	-0.54	-1.00	122		68	19	-0.58	-0.92	104	
14	IN	559	93	-1.45	2.53	712	224	505	84	-1.34	2.51	659	.
	OUT	92	15	-1.17	1.47	119		73	14	-1.17	1.69	98	
15	IN	306	130	1.10	1.07	731	107	289	116	1.11	1.43	691	.
	OUT	59	18	1.24	1.29	118		42	18	1.22	1.48	103	
16	IN	117	25	0.10	-1.27	164	72	115	24	0.08	-1.31	159	.
	OUT	34	4	0.13	-1.10	41		16	3	0.26	-1.21	24	
17	IN	75	22	-0.45	-0.78	114	24	74	22	-0.48	-0.74	111	.
	OUT	28	3	-0.09	-0.06	39		11	3	-0.39	0.07	17	
18	IN	21	13	0.57	-0.28	53	7	20	13	0.59	-0.24	52	.
	OUT	22	2	0.58	1.36	31		5	2	0.50	-0.26	10	

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(b) partly cloudy day

DAY = 81026

		1 METER						6 METER					
HOUR		GBL	STD	SKEW	KUR	MAX	DIF	GBL	STD	SKEW	KUR	MAX	DIF
8	IN	2	1	0.74	0.20	5	15	2	1	0.96	0.99	6	15
	OUT	2	1	0.16	0.42	5		5	1	0.72	1.21	10	
9	IN	10	3	0.41	-0.51	19	21	10	3	0.18	-0.71	17	21
	OUT	4	1	0.14	-0.20	6		7	2	0.64	0.13	13	
10	IN	17	6	1.10	0.74	34	64	17	6	1.15	0.84	35	65
	OUT	5	1	1.22	2.99	10		8	2	0.47	-0.17	13	
11	IN	67	33	0.85	0.40	169	55	68	33	0.81	0.22	160	57
	OUT	14	7	1.14	1.40	37		17	6	0.82	0.62	35	
12	IN	55	16	0.41	-0.77	94	122	57	17	0.56	-0.37	101	124
	OUT	12	3	0.15	-0.69	19		15	3	0.52	-0.34	24	
13	IN	134	53	0.50	-0.43	289	120	135	53	0.59	0.01	308	121
	OUT	29	12	0.66	-0.21	63		30	11	0.54	-0.23	64	
14	IN	227	111	0.87	-0.08	603	81	225	104	0.84	0.04	521	80
	OUT	57	26	0.45	-0.90	129		56	23	0.08	-1.45	105	
15	IN	240	103	0.07	-0.83	452	67	233	97	0.15	-0.29	483	68
	OUT	68	19	-1.33	2.06	101		67	15	-2.05	3.77	84	
16	IN	138	73	0.87	0.56	374	44	136	60	0.28	-0.63	291	45
	OUT	41	18	-0.29	-0.85	75		41	16	-0.42	-0.89	67	
17	IN	71	51	1.49	0.97	241	19	68	42	1.68	2.20	231	20
	OUT	22	15	0.91	-0.71	58		25	13	0.81	-1.07	49	
18	IN	15	11	0.24	-1.47	32	6	16	11	0.28	-1.43	35	6
	OUT	5	3	0.36	-1.29	11		8	3	0.22	-1.15	14	

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DAY = 81026

		10 METER						14 METER					
HOUR		GBL	STD	SKEW	KUR	MAX	DIF	GBL	STD	SKEW	KUR	MAX	DIF
8	IN	2	1	1.24	1.62	6	16	6	1	0.75	0.79	10	15
	OUT	2	0	0.76	-0.15	14		7	1	1.33	4.71	14	
9	IN	11	4	0.35	-0.54	19	23	15	4	0.02	-0.83	24	22
	OUT	4	1	0.18	-0.29	14		8	2	0.62	0.18	14	
10	IN	18	7	0.97	0.19	36	70	23	7	1.11	0.55	44	74
	OUT	4	1	0.47	-0.42	15		9	2	0.37	-0.36	15	
11	IN	74	36	0.80	0.31	184	61	82	40	0.95	0.72	211	65
	OUT	13	5	0.89	0.62	36		18	6	0.92	0.69	36	
12	IN	62	18	0.52	-0.66	103	134	70	18	0.32	-0.84	116	143
	OUT	12	3	0.53	-0.54	24		16	3	0.17	-0.71	24	
13	IN	149	58	0.31	-0.81	302	128	162	66	0.96	1.23	446	136
	OUT	27	11	0.62	-0.14	73		32	11	0.85	0.42	73	
14	IN	261	127	0.59	-0.93	568	83	281	129	0.59	-0.95	608	85
	OUT	53	23	0.12	-1.48	106		57	23	0.22	-1.47	106	
15	IN	304	113	-0.44	-0.50	527	70	347	133	-0.65	-0.93	517	73
	OUT	64	15	-2.24	4.59	82		69	15	-2.42	5.38	82	
16	IN	178	90	0.23	-1.14	371	47	204	106	0.34	-0.83	429	48
	OUT	38	16	-0.32	-0.83	72		44	17	-0.25	-0.91	72	
17	IN	80	49	1.32	0.63	248	21	119	82	0.90	-0.82	285	21
	OUT	20	12	0.76	-1.04	56		27	14	0.73	-1.02	56	
18	IN	17	13	0.26	-1.47	36	6	23	14	0.25	-1.46	48	5
	OUT	5	3	0.38	-1.10	16		10	3	0.30	-1.16	16	

BEST DOCUMENT AVAILABLE

DAY = 81026

		17 METER						21 METER					
HOUR		GBL	STD	SKEW	KUR	MAX	DIF	GBL	STD	SKEW	KUR	MAX	DIF
8	IN	6	2	1.05	1.27	12	18	2	1	1.33	1.23	6	21
	OUT	2	1	0.58	-0.92	11		6	2	1.12	1.85	11	
9	IN	16	5	0.15	-0.60	27	25	15	5	0.30	-0.56	27	30
	OUT	4	1	-0.07	-0.22	12		7	1	0.41	-0.11	12	
10	IN	25	7	1.45	1.74	49	84	26	9	1.03	0.28	52	104
	OUT	5	1	1.69	5.46	14		8	2	0.14	0.40	14	
11	IN	89	44	0.77	-0.14	206	72	109	55	0.77	-0.13	254	90
	OUT	12	6	0.95	0.43	31		15	5	0.99	0.61	31	
12	IN	76	21	0.49	-0.57	128	157	90	26	0.51	-0.45	159	198
	OUT	11	2	0.43	-0.21	22		14	3	0.15	-0.64	22	
13	IN	170	67	0.59	-0.32	356	152	217	92	0.91	0.68	553	189
	OUT	24	10	0.99	0.67	66		28	10	0.95	0.78	66	
14	IN	301	127	0.40	-1.07	564	93	390	164	0.21	-1.42	728	111
	OUT	50	22	0.09	-1.60	97		52	21	0.21	-1.44	97	
15	IN	372	127	-0.63	-0.47	562	82	459	108	-1.63	2.36	586	100
	OUT	64	15	-2.20	4.78	82		65	14	-2.33	5.18	82	
16	IN	226	106	0.26	-0.76	435	55	272	117	-0.09	-1.10	462	66
	OUT	39	17	-0.35	-0.84	70		42	16	-0.54	-0.82	70	
17	IN	120	76	1.06	-0.39	297	26	144	92	0.91	-0.86	329	30
	OUT	22	13	0.70	-1.14	49		26	13	0.60	-1.29	49	
18	IN	25	15	0.30	-1.35	58	6	26	20	0.33	-1.34	66	7
	OUT	5	3	0.33	-1.01	17		9	3	0.20	-0.81	17	

BEST DOCUMENT AVAILABLE

DAY = 81026

		26 METER						33 METER					
HUUR		GBL	STD	SKEW	KUR	MAX	DIF	GBL	STD	SKEW	KUR	MAX	DIF
8	IN	3	1	1.07	0.60	7	21	2	1	1.77	2.96	7	.
	OUT	12	2	0.14	0.06	16		3	1	0.10	-1.45	5	
9	IN	16	6	0.24	-0.80	29	31	16	6	0.14	-0.86	26	.
	OUT	13	2	0.56	0.40	19		4	1	-0.22	-0.34	6	
10	IN	28	10	1.21	0.92	58	105	27	10	1.28	1.13	57	.
	OUT	14	2	0.61	0.70	21		5	1	1.11	2.92	10	
11	IN	115	59	0.87	0.24	285	90	113	59	0.86	0.25	284	.
	OUT	22	6	0.86	0.34	40		13	6	1.03	0.68	31	
12	IN	96	27	0.53	-0.42	167	198	95	26	0.52	-0.41	166	.
	OUT	21	3	0.23	-0.09	29		12	3	0.63	0.33	20	
13	IN	228	94	0.83	0.38	550	186	224	91	0.83	0.67	547	.
	OUT	38	12	0.81	0.25	79		27	11	0.94	0.61	67	
14	IN	418	166	0.03	-1.52	706	108	380	140	0.02	-1.44	643	.
	OUT	72	25	0.17	-1.57	112		54	23	0.11	-1.57	95	
15	IN	509	103	-2.24	4.87	616	98	438	96	-2.05	3.69	535	.
	OUT	88	15	-2.34	4.86	104		69	15	-2.30	4.71	83	
16	IN	311	125	-0.37	-1.03	489	65	262	102	-0.28	-1.09	412	.
	OUT	62	19	-0.41	-0.99	87		44	18	-0.44	-0.98	72	
17	IN	170	99	0.68	-1.27	340	30	138	76	0.69	-1.27	272	.
	OUT	44	15	0.66	-1.21	72		26	15	0.66	-1.27	54	
18	IN	30	23	0.33	-1.35	77	7	28	21	0.23	-1.49	63	.
	OUT	23	3	0.36	-0.60	32		6	3	0.31	-1.21	13	

BEST DOCUMENT AVAILABLE

(c) overcast day

DAY = 81020

		1 METER						6 METER					
HOUR		GBL	STD	SKEW	KUR	MAX	DIF	GBL	STD	SKEW	KUR	MAX	DIF
8	IN	3	1	0.04	-0.64	4	.	3	1	0.18	0.69	5	.
	OUT	3	1	0.35	-0.86	5		4	1	-0.12	-0.36	6	
9	IN	9	4	0.40	-0.99	20	.	9	4	0.34	-1.16	17	.
	OUT	4	1	0.04	-0.96	7		4	1	0.06	0.43	7	
10	IN	19	6	0.56	-0.99	31	.	19	6	0.60	-0.94	31	.
	OUT	6	1	0.43	-0.13	9		4	1	0.95	3.39	9	
11	IN	24	8	1.01	-0.28	46	.	24	9	0.98	-0.34	46	.
	OUT	7	1	0.64	-0.33	10		4	1	0.39	0.63	7	
12	IN	42	6	0.26	-0.97	55	.	42	7	0.08	-1.14	54	.
	OUT	10	2	0.58	0.28	15		4	1	0.66	1.33	8	
13	IN	65	17	0.44	-0.74	99	.	66	17	0.36	-0.88	99	.
	OUT	14	3	0.82	0.57	23		4	1	-0.19	-0.22	6	
14	IN	81	28	0.24	-1.11	137	.	83	29	0.27	-1.08	145	.
	OUT	17	5	0.24	-0.98	32		4	1	0.70	3.90	9	
15	IN	56	13	0.56	-0.69	85	.	57	13	0.51	-0.82	85	.
	OUT	13	3	1.04	0.77	23		4	1	-0.12	-0.45	6	
16	IN	47	9	1.36	2.62	80	.	47	8	1.22	1.93	79	.
	OUT	12	2	1.01	2.60	20		4	1	0.24	0.84	8	
17	IN	16	4	1.60	1.94	31	.	17	4	1.69	2.47	33	.
	OUT	6	1	0.81	0.96	9		5	1	0.02	0.85	7	
18	IN	7	3	0.61	-0.31	16	.	7	3	0.59	-0.39	14	.
	OUT	4	1	0.92	0.51	7		5	1	-0.18	0.14	7	

BEST DOCUMENT AVAILABLE

DAY = 81020

		10 METER						14 METER					
HOUR		GBL	STD	SKEW	KUR	MAX	DIF	GBL	STD	SKEW	KUR	MAX	DIF
8	IN	3	1	-0.00	-0.02	4	.	4	1	-0.02	0.11	6	.
	OUT	3	1	0.36	0.40	7		5	1	0.07	-0.15	7	
9	IN	9	5	0.32	-1.19	20	.	12	5	0.31	-1.24	22	.
	OUT	4	1	0.80	2.26	9		6	1	-0.06	-0.15	9	
10	IN	21	6	0.53	-1.05	33	.	24	7	0.65	-0.78	41	.
	OUT	6	1	0.53	-0.22	14		8	2	1.33	2.57	14	
11	IN	26	10	0.94	-0.48	48	.	29	10	1.10	-0.14	54	.
	OUT	6	2	1.27	1.62	13		9	2	1.02	0.04	13	
12	IN	46	6	-0.01	-0.84	58	.	51	8	0.06	-1.15	63	.
	OUT	10	1	0.05	-0.07	15		12	1	0.37	-0.05	15	
13	IN	72	19	0.43	-0.82	110	.	79	21	0.44	-0.86	121	.
	OUT	13	3	0.45	-0.85	21		16	3	0.40	-0.96	21	
14	IN	90	33	0.29	-1.05	156	.	100	35	0.30	-1.14	171	.
	OUT	17	5	0.31	-0.98	31		19	5	0.38	-0.90	31	
15	IN	61	15	0.45	-0.80	94	.	67	16	0.44	-0.85	103	.
	OUT	12	3	0.82	0.10	22		15	3	0.48	-0.36	22	
16	IN	51	9	1.57	2.97	88	.	58	11	1.54	3.15	100	.
	OUT	11	2	1.70	3.74	20		14	2	1.11	1.65	20	
17	IN	18	5	1.67	2.58	35	.	21	6	1.68	2.16	41	.
	OUT	5	1	1.16	2.21	14		9	2	1.03	0.95	14	
18	IN	7	4	0.55	-0.33	19	.	9	4	0.61	-0.26	19	.
	OUT	3	1	0.12	-0.55	10		7	1	0.21	-0.26	10	

BEST DOCUMENT AVAILABLE

DAY = 81020

		17 METER						21 METER					
HOUR		GBL	STD	SKEW	KUR	MAX	DIF	GBL	STD	SKEW	KUR	MAX	DIF
8	IN	5	1	0.19	1.66	8	•	3	1	0.31	0.12	5	•
	OUT	3	1	0.30	-0.63	8		5	1	0.61	2.08	8	
9	IN	12	6	0.44	-0.88	26	•	13	7	0.32	-1.25	27	•
	OUT	4	1	0.11	-0.74	9		5	1	0.57	0.57	9	
10	IN	26	8	0.63	-1.02	43	•	31	9	0.54	-0.89	52	•
	OUT	5	1	0.17	0.74	12		7	1	1.17	2.05	12	
11	IN	31	11	1.00	-0.33	56	•	38	14	1.13	-0.06	71	•
	OUT	6	1	1.23	1.19	11		7	1	0.81	-0.20	11	
12	IN	55	8	0.08	-1.04	72	•	68	11	0.21	-1.02	89	•
	OUT	9	1	0.19	-0.38	14		10	1	0.47	-0.29	14	
13	IN	84	22	0.41	-0.96	123	•	110	29	0.38	-0.92	165	•
	OUT	12	3	0.59	-0.29	20		15	3	0.14	-1.17	20	
14	IN	106	36	0.30	-1.09	180	•	139	48	0.29	-1.07	238	•
	OUT	16	4	0.29	-1.09	30		18	5	0.23	-0.93	30	
15	IN	71	17	0.32	-1.15	102	•	92	21	0.48	-0.89	138	•
	OUT	12	2	0.39	-0.82	20		14	2	0.45	-0.61	20	
16	IN	61	12	1.26	1.81	100	•	79	15	1.61	3.10	136	•
	OUT	11	2	0.79	0.89	20		13	2	0.92	0.67	20	
17	IN	22	6	1.58	1.71	41	•	26	8	1.79	2.64	56	•
	OUT	6	1	1.25	2.47	13		8	1	0.75	0.60	13	
18	IN	10	4	0.65	-0.30	20	•	10	5	0.64	-0.32	23	•
	OUT	4	1	0.35	-0.61	10		6	1	0.55	1.31	10	

BEST DOCUMENT AVAILABLE

DAY = 81020

		26 METER						33 METER					
HOUR		GBL	STD	SKEW	KUR	MAX	DIF	GBL	STD	SKEW	KUR	MAX	DIF
8	IN	3	1	0.13	-0.94	6	.	3	1	0.52	0.64	5	.
	OUT	17	1	1.76	5.75	22		3	1	-0.28	-0.83	5	
9	IN	14	7	0.34	-1.13	31	.	13	7	0.32	-1.26	27	.
	OUT	18	1	0.71	0.41	23		4	1	0.61	0.07	8	
10	IN	33	10	0.67	-0.74	59	.	32	10	0.63	-0.80	56	.
	OUT	17	2	0.83	0.13	23		6	1	0.42	-0.04	9	
11	IN	40	15	1.03	-0.19	75	.	39	15	1.05	-0.15	77	.
	OUT	17	2	0.99	0.37	24		7	1	0.83	0.02	10	
12	IN	71	11	0.16	-1.17	91	.	70	11	0.13	-1.07	90	.
	OUT	22	2	0.54	1.57	29		10	2	0.81	0.80	16	
13	IN	111	29	0.41	-0.86	168	.	110	30	0.36	-0.95	167	.
	OUT	28	3	0.02	-1.01	34		14	3	0.68	0.13	23	
14	IN	141	48	0.27	-1.09	239	.	140	49	0.31	-1.04	239	.
	OUT	33	5	0.23	-1.02	45		18	5	0.15	-1.24	28	
15	IN	94	21	0.45	-0.95	138	.	92	21	0.47	-0.85	139	.
	OUT	29	3	0.47	-0.52	37		13	2	0.77	0.05	21	
16	IN	80	15	1.41	2.44	134	.	79	15	1.56	2.93	134	.
	OUT	27	2	1.05	0.85	34		12	2	1.48	2.70	20	
17	IN	27	8	1.76	2.49	58	.	26	8	1.74	2.41	55	.
	OUT	22	1	0.91	0.67	26		6	1	1.19	1.87	10	
18	IN	11	6	0.66	-0.19	24	.	10	5	0.62	-0.31	24	.
	OUT	20	1	-0.03	1.31	25		4	1	1.04	0.98	8	

BEST DOCUMENT AVAILABLE

Table II

Photosynthetically active radiant fluxes and their statistics by hour and height in the forest.

(a) clear day

DAY = 81025

		1 METER					6 METER				
HOUR		PAR	STD	SKEW	KUR	MAX	PAR	STD	SKEW	KUR	MAX
8	IN	3	1	1.44	1.25	7	3	1	1.24	0.52	6
	OUT	.	.	.	.	.	3	0	2.85	13.92	6
9	IN	11	5	0.84	-0.03	25	10	5	0.70	-0.27	21
	OUT	.	.	.	.	.	4	1	1.39	2.85	6
10	IN	51	19	-0.06	-0.75	100	49	19	0.06	-0.77	90
	OUT	.	.	.	.	.	7	2	0.20	-0.72	12
11	IN	69	29	0.85	-0.01	166	65	26	0.76	-0.35	138
	OUT	.	.	.	.	.	9	3	0.32	-1.25	15
12	IN	104	33	0.63	-0.17	204	103	32	0.61	-0.44	184
	OUT	.	.	.	.	.	13	2	-0.41	-0.77	17
13	IN	134	46	0.35	-0.97	261	122	36	0.23	-0.67	216
	OUT	.	.	.	.	.	15	3	-0.54	-0.97	20
14	IN	133	42	0.10	-0.71	225	130	39	-0.13	-0.77	211
	OUT	.	.	.	.	.	15	4	-1.54	3.00	20
15	IN	78	31	1.22	2.31	195	76	30	1.45	3.86	224
	OUT	.	.	.	.	.	11	3	1.17	1.46	21
16	IN	34	7	0.22	-1.30	48	33	7	0.19	-1.25	46
	OUT	.	.	.	.	.	6	1	0.26	-0.80	8
17	IN	22	6	-0.46	-0.75	32	21	6	-0.45	-0.76	31
	OUT	.	.	.	.	.	5	1	-0.12	1.18	7
18	IN	7	4	0.68	-0.06	16	7	3	0.66	-0.20	15
	OUT	.	.	.	.	.	3	0	0.76	1.75	5

BEST DOCUMENT AVAILABLE

DAY = 81025

HOUR		10 METER PAR	STD	SKEW	KUR	MAX	14 METER PAR	STD	SKEW	KUR	MAX
8	IN	4	1	0.77	0.23	7	2	1	1.29	0.39	5
	OUT	2	0	3.63	21.70	5	.	.	.	.	.
9	IN	13	5	0.72	-0.25	27	12	5	0.61	-0.39	25
	OUT	3	1	1.90	5.65	6	.	.	.	.	.
10	IN	58	22	0.13	-0.52	111	58	23	-0.03	-0.91	105
	OUT	7	2	-0.02	-0.80	10	.	.	.	.	.
11	IN	78	31	0.60	-0.87	157	77	30	0.57	-0.91	149
	OUT	8	2	0.38	-1.17	13	.	.	.	.	.
12	IN	118	39	0.73	-0.37	226	129	37	-0.01	-0.94	209
	OUT	12	2	-0.34	-0.90	16	.	.	.	.	.
13	IN	139	42	0.54	-0.56	251	151	47	0.19	-0.85	270
	OUT	14	3	-0.49	-0.89	20	.	.	.	.	.
14	IN	152	41	-0.34	-0.61	233	165	48	-0.28	-0.66	261
	OUT	14	3	-1.83	4.68	20	.	.	.	.	.
15	IN	90	34	1.03	1.45	218	97	45	1.44	2.12	247
	OUT	9	3	1.09	1.03	19	.	.	.	.	.
16	IN	39	8	0.28	-1.13	58	40	8	0.19	-1.18	56
	OUT	5	1	0.23	-1.04	7	.	.	.	.	.
17	IN	26	7	-0.43	-0.73	39	25	7	-0.44	-0.70	38
	OUT	4	1	-0.50	1.07	6	.	.	.	.	.
18	IN	9	4	0.68	-0.08	20	8	4	0.61	-0.21	18
	OUT	3	0	0.66	0.92	4	.	.	.	.	.

BEST DOCUMENT AVAILABLE

DAY = 81025

		17 METER					21 METER				
HOUR		PAR	STD	SKEW	KUR	MAX	PAR	STD	SKEW	KUR	MAX
8	IN	3	1	1.29	0.44	6	3	1	1.38	0.58	7
	OUT	2	0	2.17	10.66	3	4	1	1.00	1.09	6
9	IN	13	6	0.79	-0.09	28	15	7	0.71	-0.24	33
	OUT	2	1	1.45	3.20	5	4	1	0.36	0.19	7
10	IN	65	26	-0.00	-0.90	125	81	35	0.14	-0.86	156
	OUT	6	2	0.24	-0.66	11	8	2	0.15	-0.72	14
11	IN	87	34	0.34	-1.29	160	108	46	0.27	-1.40	212
	OUT	8	2	0.21	-1.46	13	10	2	0.23	-1.22	15
12	IN	147	40	-0.04	-0.94	237	178	40	-0.49	-0.92	250
	OUT	12	2	-0.49	-0.55	17	14	3	-0.57	-0.57	19
13	IN	173	53	0.01	-1.31	273	209	55	-0.40	-1.00	314
	OUT	14	3	-0.57	-1.00	19	16	3	-0.54	-0.84	22
14	IN	191	45	-0.44	-0.20	275	229	43	-1.23	1.26	298
	OUT	14	3	-1.49	3.72	20	17	4	-1.56	4.15	24
15	IN	105	42	1.25	2.60	271	127	49	0.94	0.70	277
	OUT	9	3	1.08	1.21	19	11	4	1.10	0.98	23
16	IN	43	9	0.18	-1.29	58	53	11	0.19	-1.30	73
	OUT	5	1	0.12	-1.03	6	7	1	0.39	-0.39	9
17	IN	28	8	-0.24	-0.77	45	34	9	-0.51	-0.65	50
	OUT	3	1	-1.18	3.60	4	5	1	-0.94	6.51	9
18	IN	9	4	0.39	-0.63	19	11	5	0.50	-0.54	24
	OUT	2	0	0.43	-0.04	3	4	1	0.12	-0.50	6

BEST DOCUMENT AVAILABLE

DAY = 81025

		26 METER					33 METER				
HOUR		PAR	STD	SKEW	KUR	MAX	PAR	STD	SKEW	KUR	MAX
8	IN	4	2	1.33	0.43	8	5	2	0.83	0.05	9
	OUT	2	0	3.67	21.22	5	2	0	2.81	11.46	5
9	IN	18	9	0.69	-0.31	39	18	7	0.71	-0.21	37
	OUT	3	0	0.71	0.30	5	3	1	0.78	0.73	5
10	IN	97	41	0.10	-0.90	183	84	35	0.08	-0.93	153
	OUT	7	2	0.40	-0.06	15	7	2	0.15	-0.96	12
11	IN	121	47	0.42	-1.42	200	112	44	0.27	-1.49	199
	OUT	9	3	0.27	-1.44	16	9	3	0.32	-1.36	16
12	IN	156	27	0.04	-1.24	200	160	32	-0.56	-1.01	200
	OUT	13	3	-0.62	-0.63	17	13	3	-0.68	-0.44	18
13	IN	155	17	0.53	-0.33	195	147	27	0.53	-0.92	199
	OUT	15	3	-0.64	-0.91	20	15	3	-0.58	-1.01	21
14	IN	155	27	0.51	-1.66	194	166	31	-0.85	-0.94	199
	OUT	16	4	-1.49	3.78	22	15	3	-1.75	4.98	21
15	IN	130	34	-0.35	-0.34	199	120	34	0.18	-0.17	198
	OUT	10	4	1.28	1.72	23	10	3	1.25	1.80	21
16	IN	63	13	0.12	-1.27	86	56	11	0.08	-1.27	76
	OUT	5	1	0.30	-1.05	7	5	1	0.33	-0.70	7
17	IN	40	11	-0.48	-0.77	59	38	9	-0.42	-0.66	57
	OUT	4	1	-0.34	1.33	6	[illegible]	1	-0.32	2.63	7
18	IN	12	6	0.58	-0.30	28	15	6	0.31	-0.[illegible]	30
	OUT	3	0	0.92	1.91	4	3	0	0.26	-0.33	4

BEST DOCUMENT AVAILABLE

(b) partly cloudy day

DAY = 81026

		1 METER					6 METER				
HOUR		PAR	STD	SKEW	KUR	MAX	PAR	STD	SKEW	KUR	MAX
8	IN	2	0	1.16	1.71	4	3	0	1.68	5.47	4
	OUT	.	.	.	.	.	3	0	1.93	9.91	5
9	IN	6	2	0.29	-0.88	10	6	2	0.16	-0.76	9
	OUT	.	.	.	.	.	3	0	0.28	-0.42	3
10	IN	10	3	1.04	0.49	18	10	3	1.15	0.78	18
	OUT	.	.	.	.	.	3	0	0.16	-0.68	4
11	IN	32	14	0.66	-0.07	72	31	14	0.72	-0.05	68
	OUT	.	.	.	.	.	5	1	0.75	0.08	7
12	IN	28	7	0.31	-0.79	44	27	7	0.46	-0.49	46
	OUT	.	.	.	.	.	4	1	0.97	2.06	7
13	IN	62	22	0.32	-0.82	117	60	22	0.57	0.14	142
	OUT	.	.	.	.	.	7	2	0.69	-0.27	13
14	IN	105	49	0.72	-0.54	236	100	45	0.67	-0.50	228
	OUT	.	.	.	.	.	12	4	0.05	-1.45	19
15	IN	105	46	0.12	-0.90	214	100	43	0.19	-0.65	210
	OUT	.	.	.	.	.	13	3	-1.82	3.11	17
16	IN	64	31	0.68	-0.26	156	61	25	0.54	-0.17	137
	OUT	.	.	.	.	.	8	3	-0.16	-0.86	14
17	IN	33	20	1.77	2.30	103	30	15	1.66	1.94	82
	OUT	.	.	.	.	.	5	2	0.81	-0.93	10
18	IN	8	5	0.28	-1.48	16	8	5	0.31	-1.44	16
	OUT	.	.	.	.	.	3	1	-0.06	-0.64	4

BEST DOCUMENT AVAILABLE

DAY = 81026

		10 METER					14 METER				
HOUR		PAR	STD	SKEW	KUR	MAX	PAR	STD	SKEW	KUR	MAX
8	IN	3	1	1.74	2.66	8	3	0	1.80	3.57	5
	OUT	3	0	-1.75	1.96	3	.	.	.	.	.
9	IN	11	2	0.04	-0.61	15	7	2	0.06	-0.84	12
	OUT	3	0	-0.01	-0.44	3	.	.	.	.	.
10	IN	15	4	0.92	-0.05	25	11	3	1.17	0.56	21
	OUT	3	0	1.46	4.08	4	.	.	.	.	.
11	IN	42	16	0.63	-0.09	86	38	18	0.83	0.34	92
	OUT	4	1	0.31	-0.13	7	.	.	.	.	.
12	IN	37	8	0.47	-0.62	56	34	8	0.23	-0.80	53
	OUT	4	1	0.07	-0.44	6	.	.	.	.	.
13	IN	76	26	0.44	-0.12	172	76	30	0.96	1.02	190
	OUT	7	2	0.54	-0.42	12	.	.	.	.	.
14	IN	124	54	0.51	-0.95	249	127	61	0.61	-1.03	255
	OUT	11	4	0.02	-1.63	18	.	.	.	.	.
15	IN	142	52	-0.57	-0.76	235	154	55	-0.74	-0.59	228
	OUT	13	2	-1.97	4.12	16	.	.	.	.	.
16	IN	81	36	0.46	-0.91	169	91	45	0.39	-0.85	182
	OUT	8	2	-0.27	-0.85	13	.	.	.	.	.
17	IN	38	18	1.36	0.66	97	51	33	0.94	-0.83	117
	OUT	5	2	0.75	-1.09	9	.	.	.	.	.
18	IN	11	6	0.35	-1.40	22	10	6	0.29	-1.46	21
	OUT	2	0	-0.13	-0.81	3	.	.	.	.	.

BEST DOCUMENT AVAILABLE

DAY = 81026

		17 METER					21 METER				
HOUR		PAR	STD	SKEW	KUR	MAX	PAR	STD	SKEW	KUR	MAX
8	IN	2	0	1.26	2.17	4	0	0	9.41	87.45	0
	OUT	2	0	1.00	4.62	3	3	1	0.83	0.91	6
9	IN	7	2	0.21	-0.81	12	3	2	0.68	-0.47	8
	OUT	2	0	3.10	13.56	4	4	1	0.69	0.62	6
10	IN	12	4	1.42	1.41	24	8	4	1.10	0.49	21
	OUT	2	0	7.43	80.30	6	4	1	0.55	0.23	6
11	IN	42	20	0.69	-0.32	93	48	24	0.56	-0.42	107
	OUT	3	1	0.36	-0.75	6	6	1	0.10	-0.07	9
12	IN	36	10	0.46	-0.58	60	43	11	0.35	-0.45	72
	OUT	3	1	0.47	0.02	5	6	1	1.26	3.70	10
13	IN	80	30	0.51	-0.48	167	103	40	0.74	0.08	225
	OUT	6	2	0.78	0.06	11	9	2	0.53	-0.08	14
14	IN	137	57	0.32	-1.13	244	177	71	0.18	-1.45	312
	OUT	11	4	0.05	-1.52	18	14	4	0.10	-1.51	22
15	IN	172	58	-0.76	-0.42	251	211	45	-1.70	2.61	261
	OUT	13	3	-1.86	4.11	18	16	3	-1.88	3.94	21
16	IN	100	46	0.41	-0.69	196	127	51	-0.09	-1.20	205
	OUT	9	3	-0.20	-0.79	14	11	3	-0.31	-1.01	17
17	IN	53	30	1.17	-0.07	125	68	38	0.89	-0.91	142
	OUT	5	2	0.79	-0.94	10	8	3	0.60	-1.18	13
18	IN	11	7	0.28	-1.42	25	15	9	0.36	-1.31	34
	OUT	2	1	0.20	-1.15	3	4	1	0.24	-0.11	7

BEST DOCUMENT AVAILABLE

DAY = 81026

		26 METER					33 METER				
HOUR		PAR	STD	SKEW	KUR	MAX	PAR	STD	SKEW	KUR	MAX
8	IN	3	1	2.26	6.75	6	5	1	0.78	0.77	9
	OUT	2	0	0.09	-1.26	3	2	0	0.28	0.32	4
9	IN	10	3	0.20	-0.87	16	11	3	0.25	-0.69	17
	OUT	2	0	2.48	8.87	5	3	0	1.62	5.70	4
10	IN	17	5	1.17	0.79	32	17	4	1.15	0.77	31
	OUT	2	0	1.85	7.70	4	3	0	0.72	0.88	4
11	IN	61	29	0.77	-0.03	140	54	24	0.75	-0.06	122
	OUT	4	1	0.51	-0.17	7	4	1	0.69	-0.18	7
12	IN	52	13	0.46	-0.33	87	47	11	0.43	-0.45	77
	OUT	4	1	0.93	1.03	6	4	1	1.03	1.56	6
13	IN	113	38	0.37	-0.75	197	101	35	0.50	-0.45	197
	OUT	7	2	0.65	-0.13	13	7	2	0.79	0.13	14
14	IN	136	32	-0.00	-1.19	198	126	34	0.23	-1.01	192
	OUT	12	5	0.19	-1.50	20	12	4	0.08	-1.58	18
15	IN	119	41	0.65	-0.58	196	136	48	0.10	-1.83	197
	OUT	15	3	-2.23	4.38	18	15	3	-2.00	3.88	18
16	IN	128	45	-0.33	-1.29	200	.	.	.	.	.
	OUT	10	3	-0.22	-0.97	16	10	3	-0.38	-0.97	16
17	IN	83	43	0.70	-1.28	160	.	.	.	.	.
	OUT	6	3	0.73	-1.11	12	7	3	0.65	-1.25	13
18	IN	17	11	0.34	-1.37	40	.	.	.	.	.
	OUT	3	1	0.47	0.32	5	3	1	0.23	-0.69	4

BEST DOCUMENT AVAILABLE

(c) overcast day

DAY = 81020

		1 METER					6 METER				
HOUR		PAR	STD	SKEW	KUR	MAX	PAR	STD	SKEW	KUR	MAX
8	IN	2	0	0.61	-0.94	3	3	0	0.55	-0.00	4
	OUT	.	.	.	.	.	2	0	0.70	1.01	3
9	IN	6	2	0.20	-1.31	10	6	2	0.21	-1.25	10
	OUT	.	.	.	.	.	3	0	0.03	0.48	4
10	IN	11	3	0.73	-0.79	17	11	3	0.73	-0.78	16
	OUT	.	.	.	.	.	3	0	0.17	0.17	4
11	IN	14	4	0.91	-0.50	24	13	4	0.94	-0.36	22
	OUT	.	.	.	.	.	3	0	0.40	2.78	6
12	IN	23	3	0.09	-1.00	29	22	3	0.02	-1.00	28
	OUT	.	.	.	.	.	4	0	0.30	2.37	6
13	IN	34	8	0.40	-0.83	52	32	7	0.33	-0.93	46
	OUT	.	.	.	.	.	5	1	0.66	0.08	7
14	IN	42	14	0.25	-1.10	69	39	12	0.27	-1.05	64
	OUT	.	.	.	.	.	5	1	0.12	-1.00	7
15	IN	29	6	0.49	-0.79	43	27	5	0.34	-1.15	38
	OUT	.	.	.	.	.	4	1	0.91	0.53	7
16	IN	25	4	1.43	2.99	40	22	3	1.14	2.00	35
	OUT	.	.	.	.	.	4	1	2.00	8.25	7
17	IN	9	2	1.72	2.19	17	8	2	1.53	1.83	15
	OUT	.	.	.	.	.	4	0	-0.03	-1.24	5
18	IN	4	2	0.66	-0.14	8	3	1	0.40	-0.94	6
	OUT	.	.	.	.	.	3	0	0.48	1.74	5

BEST DOCUMENT AVAILABLE

DAY = 81020

HOUR		10 METER PAR	STD	SKEW	KUR	MAX	14 METER PAR	STD	SKEW	KUR	MAX
8	IN	2	0	0.19	-0.23	3	3	0	0.29	-0.32	4
	OUT	3	0	0.26	0.04	3	.	.	.	.	.
9	IN	6	2	0.11	-1.44	9	7	2	0.24	-1.28	11
	OUT	3	0	0.10	-0.83	4	.	.	.	.	.
10	IN	11	3	0.59	-0.99	17	13	3	0.71	-0.66	21
	OUT	3	0	0.45	0.33	4	.	.	.	.	.
11	IN	14	5	0.91	-0.53	25	16	5	1.02	-0.22	27
	OUT	3	0	0.66	1.13	5	.	.	.	.	.
12	IN	24	3	-0.05	-0.84	30	26	4	0.01	-1.07	32
	OUT	4	C	1.15	1.82	6	.	.	.	.	.
13	IN	36	9	0.37	-0.91	53	39	9	0.35	-0.96	57
	OUT	5	0	0.23	-0.94	6	.	.	.	.	.
14	IN	44	15	0.25	-1.10	73	48	15	0.25	-1.17	78
	OUT	5	1	0.30	-0.91	8	.	.	.	.	.
15	IN	31	7	0.40	-0.88	46	33	7	0.42	-0.86	49
	OUT	5	0	1.80	7.91	8	.	.	.	.	.
16	IN	26	4	1.57	3.18	42	28	5	1.78	4.27	48
	OUT	4	0	0.74	-0.04	5	.	.	.	.	.
17	IN	10	2	1.74	2.59	19	10	3	1.64	1.79	20
	OUT	3	0	0.41	0.07	4	.	.	.	.	.
18	IN	4	2	0.58	-0.36	8	5	2	0.60	-0.35	9
	OUT	3	0	-0.03	0.27	4	.	.	.	.	.

BEST DOCUMENT AVAILABLE

DAY = 81020

		17 METER					21 METER				
HOUR		PAR	STD	SKEW	KUR	MAX	PAR	STD	SKEW	KUR	MAX
8	IN	2	0	2.41	12.23	4	0	1	3.11	7.97	2
	OUT	2	0	0.76	7.07	2	4	1	1.97	7.89	6
9	IN	6	3	0.34	-1.14	12	3	3	0.31	-1.34	10
	OUT	2	0	0.23	-0.70	3	4	0	1.21	2.61	5
10	IN	13	4	0.74	-0.83	21	12	5	0.72	-0.69	23
	OUT	2	0	0.97	3.27	4	4	1	0.85	0.61	6
11	IN	16	5	0.89	-0.50	28	16	7	1.08	-0.16	32
	OUT	2	0	0.14	-0.72	3	4	1	0.83	1.45	6
12	IN	28	4	0.05	-0.84	36	32	6	0.03	-1.02	43
	OUT	3	0	1.25	3.00	4	5	0	0.32	0.32	6
13	IN	41	10	0.37	-0.94	60	54	14	0.31	-1.01	80
	OUT	4	1	-0.13	-0.58	4	6	1	0.13	-0.27	8
14	IN	51	17	0.34	-1.05	86	68	22	0.26	-1.09	113
	OUT	4	1	0.73	0.43	7	6	1	0.35	-0.82	9
15	IN	35	8	0.23	-1.21	50	47	10	0.43	-0.95	67
	OUT	4	0	0.10	-0.48	5	5	1	0.14	-0.58	7
16	IN	30	5	1.18	1.68	47	40	7	1.65	3.31	66
	OUT	4	0	0.65	0.52	5	5	1	0.48	-0.20	7
17	IN	11	3	1.45	0.97	20	14	4	1.75	2.33	29
	OUT	3	0	0.99	4.03	3	4	1	0.72	0.36	6
18	IN	5	2	0.56	-0.53	10	6	3	0.46	-0.59	12
	OUT	2	0	0.05	-0.27	3	4	1	1.34	3.15	6

BEST DOCUMENT AVAILABLE

DAY = 81020

HOUR		26 METER PAR	STD	SKEW	KUR	MAX	33 METER PAR	STD	SKEW	KUR	MAX
8	IN	3	0	1.00	-0.23	4	4	1	1.42	5.00	9
	OUT	2	0	0.53	4.86	3	3	0	1.59	2.00	4
9	IN	9	4	0.23	-1.28	17	9	3	0.23	-1.18	16
	OUT	3	0	3.01	20.03	5	3	0	0.18	-1.10	4
10	IN	18	5	0.71	-0.73	30	18	5	0.65	-0.65	29
	OUT	3	0	0.13	0.23	4	3	0	0.52	2.70	5
11	IN	23	8	0.97	-0.33	41	22	7	1.00	-0.21	39
	OUT	3	0	1.37	5.94	5	3	0	0.59	1.01	5
12	IN	40	6	0.08	-1.15	52	36	5	0.07	-1.06	46
	OUT	3	0	0.32	-0.60	4	4	0	0.47	-0.03	5
13	IN	61	15	0.39	-0.91	89	54	13	0.33	-1.00	79
	OUT	4	1	0.28	0.38	6	5	1	0.04	-0.50	7
14	IN	75	24	0.27	-1.09	125	66	21	0.30	-1.04	110
	OUT	5	1	0.31	-0.56	8	5	1	0.22	-0.88	7
15	IN	51	11	0.40	-1.02	73	46	9	0.38	-0.99	66
	OUT	4	1	-0.30	-0.79	5	5	1	0.05	-0.59	6
16	IN	43	7	1.46	2.76	71	39	7	1.59	3.19	63
	OUT	4	1	0.78	0.46	6	4	1	0.96	0.83	7
17	IN	16	4	1.74	2.30	30	15	4	1.61	1.81	28
	OUT	3	0	0.79	2.40	5	3	0	0.02	-0.30	4
18	IN	6	3	0.58	-0.35	14	8	3	0.46	-0.35	14
	OUT	3	0	0.28	-1.39	3	3	0	-0.45	-0.81	4

BEST DOCUMENT AVAILABLE

Table III

Allwave radiant fluxes and their statistics by hour and level in the forest.

(a) clear day

		1 METER					6 METER				
HOUR		ALL	STD	SKEW	KUR	MAX	ALL	STD	SKEW	KUR	MAX
1	IN	332	4	0.09	-1.57	339	325	5	0.13	-1.64	332
	OUT	348	3	-0.12	-0.71	353	344	2	-0.10	-0.39	348
2	IN	342	2	-0.56	-0.44	346	335	2	-0.78	-0.45	338
	OUT	351	2	-0.16	-0.71	356	346	2	-0.24	-0.61	350
3	IN	339	4	-1.81	2.35	342	332	4	-1.90	2.66	336
	OUT	348	2	-0.24	0.09	354	343	2	-0.57	0.62	348
4	IN	336	6	-0.82	-0.73	343	330	6	-0.89	-0.77	335
	OUT	347	3	-0.42	-0.89	352	342	2	-0.86	-0.63	346
5	IN	330	5	-0.06	-1.33	338	324	5	-0.06	-1.37	331
	OUT	344	3	-0.05	-1.57	349	339	3	-0.12	-1.41	344
6	IN	339	14	-0.51	-1.16	356	333	15	-0.55	-1.18	350
	OUT	346	7	-0.57	-1.04	354	341	5	-0.62	-0.94	347
7	IN	315	1	-0.07	-0.30	318	308	1	-0.56	-0.32	311
	OUT	334	2	-0.21	-0.00	339	331	1	0.80	0.54	334
8	IN	321	8	2.42	6.07	354	314	8	2.52	6.47	349
	OUT	335	3	1.12	1.78	346	331	2	1.78	4.48	340
9	IN	371	11	0.57	-0.28	396	366	11	0.50	-0.43	391
	OUT	358	6	0.17	-0.37	371	350	5	-0.09	-0.56	360
10	IN	445	39	0.30	-0.70	545	442	41	0.42	-0.56	541
	OUT	396	21	0.71	0.48	465	383	20	1.35	2.95	468
11	IN	491	58	0.83	-0.19	682	483	52	0.89	-0.04	640
	OUT	424	38	1.57	3.27	595	406	35	1.38	2.50	554
12	IN	569	72	0.62	-0.14	782	567	69	0.50	-0.20	758
	OUT	467	53	0.71	0.79	653	449	60	0.78	1.25	666
13	IN	649	91	0.04	-0.87	859	631	81	-0.06	-0.73	822
	OUT	507	75	0.78	1.19	783	481	70	0.82	1.03	709
14	IN	649	72	-0.22	-0.41	827	643	73	-0.31	-0.64	771
	OUT	514	84	0.05	0.28	778	498	84	0.09	0.45	728
15	IN	532	65	0.84	1.24	774	533	74	1.20	1.79	807
	OUT	460	34	1.08	2.46	598	445	39	2.65	9.77	652
16	IN	439	15	0.16	-1.30	468	434	16	0.09	-1.34	464
	OUT	414	7	-0.06	-0.27	429	404	6	0.12	-1.26	416
17	IN	411	15	-0.47	-0.80	434	404	15	-0.49	-0.78	427
	OUT	401	7	-0.45	-0.85	411	392	6	-0.63	-0.56	402
18	IN	376	9	0.61	-0.22	398	369	9	0.61	-0.25	391
	OUT	381	6	0.10	-0.86	393	375	5	0.08	-0.96	385
19	IN	362	2	-0.75	0.11	366	354	2	-0.74	-0.43	358
	OUT	371	2	-0.33	-0.63	374	366	1	0.02	-0.63	369
20	IN	361	1	-0.38	-0.35	364	354	1	-0.45	0.46	357
	OUT	368	3	-0.14	-1.15	374	364	2	0.04	-1.25	368
21	IN	351	4	-0.26	-0.72	360	344	4	-0.30	-0.64	352
	OUT	364	2	-0.56	-0.70	369	359	2	-0.39	-0.78	363
22	IN	350	2	0.94	0.16	356	343	2	0.85	0.10	349
	OUT	362	2	-0.03	-0.19	366	357	1	-0.05	-0.52	360
23	IN	350	5	-0.25	-1.08	358	343	5	-0.32	-1.14	351
	OUT	361	3	0.08	-0.10	368	356	2	0.73	-0.52	362
24	IN	350	2	-0.00	-0.48	355	344	2	0.21	-0.76	348
	OUT	358	2	0.54	-0.79	363	354	1	0.73	0.01	357

BEST DOCUMENT AVAILABLE

DAY = 81025

		10 METER					14 METER				
HOUR		ALL	STD	SKEW	KUR	MAX	ALL	STD	SKEW	KUR	MAX
1	IN	328	5	0.26	-1.38	337	322	6	0.11	-1.56	331
	OUT	354	1	0.08	0.10	358	355	1	0.20	-0.15	357
2	IN	340	2	-0.40	-0.66	342	335	3	-0.86	-0.43	339
	OUT	355	2	-0.58	-0.60	358	355	2	-0.61	-0.29	358
3	IN	336	4	-2.09	3.21	340	332	4	-1.91	2.77	335
	OUT	353	2	0.11	-0.27	357	353	1	-0.27	0.44	357
4	IN	334	6	-0.82	-0.70	340	329	6	-0.89	-0.57	336
	OUT	352	2	-0.84	0.25	355	352	1	-1.03	0.37	354
5	IN	328	5	0.04	-1.45	337	323	5	0.24	-1.24	333
	OUT	349	2	-0.00	-1.45	353	350	2	-0.17	-1.15	353
6	IN	337	16	-0.58	-1.13	357	334	16	-0.55	-1.12	353
	OUT	350	4	-0.80	-0.66	356	350	4	-0.75	-0.75	354
7	IN	312	2	-0.17	-0.61	316	305	2	0.45	0.58	310
	OUT	342	1	0.26	-0.35	346	342	1	0.25	0.25	345
8	IN	318	9	2.49	6.15	354	312	8	2.40	6.19	347
	OUT	341	2	0.26	-0.14	345	341	1	0.47	0.43	345
9	IN	373	12	0.54	-0.40	401	372	13	0.46	-0.47	401
	OUT	355	5	0.27	-0.51	367	355	4	0.07	-0.60	365
10	IN	458	46	0.49	-0.16	576	462	49	0.39	-0.55	589
	OUT	385	17	0.88	1.19	452	383	19	1.46	3.97	479
11	IN	509	64	0.68	-0.71	702	512	62	0.47	-1.34	642
	OUT	401	38	0.92	3.37	535	401	24	1.36	2.51	508
12	IN	593	81	0.57	-0.59	783	616	69	-0.28	-0.48	765
	OUT	432	65	0.41	0.99	644	439	50	0.85	1.35	637
13	IN	656	86	0.22	-0.60	848	695	97	-0.24	-0.35	940
	OUT	462	72	0.98	1.40	727	460	60	0.63	0.91	682
14	IN	694	82	-0.46	-0.39	860	725	81	-0.21	-0.13	893
	OUT	472	86	-0.06	0.23	670	476	69	1.07	2.57	754
15	IN	553	75	1.03	1.48	832	572	95	1.16	0.84	859
	OUT	440	28	1.44	3.53	555	443	28	2.14	6.96	606
16	IN	445	17	0.15	-1.28	479	446	18	0.12	-1.22	480
	OUT	409	5	0.02	-1.46	418	409	5	0.16	-1.11	420
17	IN	413	17	-0.48	-0.78	440	413	17	-0.52	-0.73	439
	OUT	399	6	-0.58	-0.59	410	399	5	-0.53	-0.75	408
18	IN	374	10	0.61	-0.26	398	371	10	0.59	-0.18	396
	OUT	383	4	0.18	-0.87	393	384	4	-0.06	-1.05	391
19	IN	358	2	-0.83	0.02	362	354	3	-0.71	-0.27	359
	OUT	375	1	-0.25	-0.51	378	375	1	-0.49	-0.34	377
20	IN	358	1	0.71	0.23	361	354	1	0.03	-0.41	357
	OUT	373	2	-0.00	-0.82	377	373	2	0.02	-1.10	377
21	IN	348	4	-0.27	-0.37	356	343	5	-0.24	-0.56	353
	OUT	369	1	-0.13	-0.24	371	369	1	-0.35	-0.18	372
22	IN	346	3	0.55	-0.43	352	342	3	0.92	0.43	350
	OUT	367	1	-0.58	0.07	369	367	1	-1.45	6.93	369
23	IN	346	6	-0.35	-1.05	356	342	6	-0.45	-1.20	352
	OUT	365	2	0.60	-0.68	370	365	2	0.61	-0.80	370
24	IN	348	2	-0.03	-0.92	352	343	2	0.10	-0.35	350
	OUT	362	1	0.22	-0.49	365	362	1	0.47	0.08	365

BEST DOCUMENT AVAILABLE

DAY = 81025

HOUR		17 METER ALL	STD	SKEW	KUR	MAX	21 METER ALL	STD	SKEW	KUR	MAX
1	IN	324	6	-0.02	-1.33	335	348	9	-0.05	-0.79	367
	OUT	362	1	-0.25	0.20	365	394	5	-0.67	-0.72	403
2	IN	338	3	-0.53	-0.45	343	364	5	-0.56	-0.61	374
	OUT	363	1	-0.73	1.21	366	395	5	-0.56	-0.82	402
3	IN	335	5	-2.01	3.53	342	362	6	-1.17	0.84	371
	OUT	361	1	-0.24	2.31	365	393	4	-0.41	-0.57	402
4	IN	333	7	-0.82	-0.73	342	359	10	-0.46	-0.38	386
	OUT	361	1	-0.86	1.20	363	392	5	-0.06	1.02	414
5	IN	327	6	0.13	-1.17	339	352	8	-0.10	-0.60	368
	OUT	359	2	-0.32	-0.75	362	391	5	-0.59	-0.90	399
6	IN	340	18	-0.59	-1.03	361	368	21	-0.52	-1.02	396
	OUT	359	3	-0.75	-0.38	363	392	6	-0.57	-0.33	403
7	IN	311	3	-0.05	0.37	318	336	5	-0.29	-0.68	345
	OUT	355	1	0.08	-0.08	359	389	5	-0.31	-0.70	398
8	IN	319	10	2.17	5.08	359	347	12	1.90	4.65	399
	OUT	354	1	0.28	-0.49	358	389	4	-0.70	-0.21	398
9	IN	384	13	0.66	-0.04	419	424	16	0.42	-0.33	462
	OUT	363	2	0.05	0.05	369	401	6	-0.32	-0.39	413
10	IN	483	55	0.39	-0.61	631	540	62	0.36	-0.67	684
	OUT	382	16	1.75	3.62	451	421	9	-0.05	-0.50	441
11	IN	532	71	0.50	-1.04	711	595	89	0.38	-1.35	791
	OUT	395	30	1.18	2.89	511	437	24	0.43	-0.37	506
12	IN	577	84	-0.12	-0.35	768	718	93	-0.47	-0.61	911
	OUT	369	54	0.70	0.32	535	463	40	0.39	-0.61	568
13	IN	639	113	0.01	-0.92	919	817	131	-0.48	-0.68	1053
	OUT	370	61	0.26	-0.12	545	502	51	0.21	-0.40	645
14	IN	674	89	-0.28	-0.20	863	880	97	-1.04	0.90	1042
	OUT	387	64	0.35	-0.12	568	545	30	-0.61	-0.14	604
15	IN	541	66	0.62	0.68	772	662	108	0.83	0.16	974
	OUT	389	27	-1.76	6.33	463	491	30	1.15	1.26	597
16	IN	433	19	0.03	-1.29	467	500	25	0.15	-1.09	555
	OUT	386	5	0.51	-0.32	399	447	9	-1.43	9.95	482
17	IN	407	18	-0.37	-0.55	441	454	22	-0.50	-0.78	488
	OUT	387	3	-0.19	-1.09	394	434	6	-0.42	0.33	450
18	IN	365	10	0.75	0.07	392	403	14	0.64	0.21	445
	OUT	380	3	-0.21	-0.72	385	421	6	-0.92	9.76	445
19	IN	347	2	-0.61	0.30	352	384	6	-1.08	8.88	412
	OUT	372	3	-0.07	-1.72	377	415	4	-0.50	18.61	441
20	IN	345	1	-0.23	-0.49	349	383	4	-0.99	4.73	395
	OUT	368	1	-0.03	-0.84	371	411	4	-0.88	4.29	422
21	IN	334	5	-0.58	-0.58	343	363	9	0.21	-0.58	383
	OUT	365	1	-0.07	0.18	369	401	6	-0.25	-0.57	414
22	IN	334	4	0.85	0.11	346	345	6	-0.66	0.08	356
	OUT	364	1	-0.01	-0.12	366	381	8	-0.21	-0.65	395
23	IN	336	6	-0.28	-1.39	346	329	11	0.13	-0.75	351
	OUT	363	1	0.54	-0.32	366	361	8	0.03	-0.75	378
24	IN	340	4	1.03	0.52	351	322	5	-0.38	-0.26	332
	OUT	363	2	1.63	1.66	369	350	4	-0.42	-1.00	358

BEST DOCUMENT AVAILABLE

DAY = 81025

HOUR		26 METER ALL	STD	SKEW	KUR	MAX	33 METER ALL	STD	SKEW	KUR	MAX
1	IN	302	9	0.10	-1.57	315	305	8	0.19	-1.55	317
	OUT	351	2	0.13	-0.98	357	364	1	0.41	0.15	367
2	IN	322	3	-1.26	0.90	327	323	2	-1.18	0.68	326
	OUT	355	1	-0.85	0.82	357	362	1	-0.84	0.57	365
3	IN	320	6	-2.12	3.29	325	319	6	-2.11	3.33	323
	OUT	353	2	-0.75	0.93	357	360	1	0.49	-0.21	363
4	IN	317	10	-0.42	-0.29	348	315	9	-0.75	-0.97	325
	OUT	350	8	-2.38	10.09	380	359	1	0.36	0.02	362
5	IN	308	8	0.14	-1.29	321	307	7	0.11	-1.34	320
	OUT	349	3	-4.59	42.61	354	358	1	0.01	-1.05	360
6	IN	328	25	-0.52	-1.18	357	325	24	-0.64	-0.80	352
	OUT	353	6	-0.68	-0.96	360	356	3	-3.19	91.33	361
7	IN	286	2	-0.08	-0.37	291	284	3	-8.96	104.05	287
	OUT	343	1	-0.14	-0.41	345	352	2	-11.30	142.81	354
8	IN	300	14	2.18	5.31	356	296	12	2.34	5.90	348
	OUT	344	3	2.10	5.02	356	349	2	0.48	-0.78	354
9	IN	390	18	0.54	-0.32	432	381	17	0.53	-0.33	421
	OUT	364	4	0.61	-0.05	375	355	3	0.49	-0.07	365
10	IN	527	77	0.41	-0.70	703	514	74	0.36	-0.76	678
	OUT	398	22	0.64	-0.34	453	381	14	0.35	-0.27	421
11	IN	594	99	0.41	-1.43	793	577	89	0.42	-1.41	753
	OUT	418	29	0.42	-1.38	482	398	15	0.66	-0.27	453
12	IN	743	100	-0.62	-0.57	924	710	86	-0.61	-0.51	870
	OUT	460	28	-0.47	-0.87	509	427	16	0.15	2.00	486
13	IN	828	134	-0.57	-0.94	1045	788	115	-0.58	-0.87	978
	OUT	487	38	-0.49	-1.03	550	445	26	0.22	0.17	520
14	IN	876	94	-1.38	1.94	1014	821	81	-1.31	1.91	951
	OUT	505	28	-1.21	1.48	551	456	21	-1.15	4.46	529
15	IN	636	127	1.01	0.54	1002	628	109	0.88	0.39	946
	OUT	441	34	1.14	0.72	537	438	23	1.49	2.74	532
16	IN	458	26	0.09	-1.27	505	466	24	0.07	-1.30	509
	OUT	400	7	0.13	-1.21	413	410	4	0.07	-1.23	417
17	IN	412	23	-0.48	-0.80	449	421	23	-0.51	-0.77	456
	OUT	387	6	-0.44	-0.88	397	401	4	-0.58	-0.71	409
18	IN	356	14	0.74	-0.03	391	364	14	0.66	-0.15	398
	OUT	373	4	0.43	-0.44	383	389	3	0.03	-0.97	395
19	IN	336	4	-0.89	-0.19	341	343	4	-0.85	-0.18	348
	OUT	367	1	-0.40	-0.37	370	382	1	0.22	-0.20	384
20	IN	336	10	-7.50	55.42	340	343	1	-0.51	0.29	346
	OUT	365	10	-7.46	55.02	368	379	1	-0.19	-1.18	382
21	IN	323	7	-0.47	-0.51	336	329	7	-0.37	-0.55	341
	OUT	362	2	-0.44	-0.28	365	376	1	0.26	-0.73	379
22	IN	324	5	0.93	0.08	335	328	4	0.89	0.23	339
	OUT	361	1	-0.21	0.73	364	374	1	0.03	-0.83	376
23	IN	327	10	-1.02	1.96	340	331	9	-0.46	-1.24	343
	OUT	360	5	-9.35	110.77	365	371	1	0.34	-0.87	375
24	IN	332	4	0.12	-0.53	341	333	3	0.21	-0.86	341
	OUT	360	1	0.23	-0.51	364	369	1	0.15	-0.29	371

BEST DOCUMENT AVAILABLE

(b) partly cloudy day

DAY = 81026

HOUR		1 METER ALL	STD	SKEW	KUR	MAX	6 METER ALL	STD	SKEW	KUR	MAX
1	IN	358	1	0.03	0.91	362	352	2	0.53	1.74	357
	OUT	361	1	-0.63	-0.42	364	356	1	-0.70	0.25	359
2	IN	357	1	0.27	-0.07	359	351	1	0.15	-0.62	352
	OUT	359	1	-0.52	0.11	362	354	1	-1.08	3.03	357
3	IN	359	2	0.91	-0.42	362	352	2	0.77	-0.65	356
	OUT	361	1	-0.84	-0.12	364	355	2	-0.40	0.17	358
4	IN	357	2	-0.34	-0.37	360	351	2	-0.03	-0.55	355
	OUT	358	2	0.49	-0.38	363	352	1	-0.61	0.31	354
5	IN	355	4	-1.74	2.53	359	349	5	-1.55	2.02	354
	OUT	357	2	-1.05	1.24	361	351	2	-0.24	-0.33	355
6	IN	348	6	-0.70	-0.87	355	339	6	-0.58	-0.90	347
	OUT	353	3	-0.46	-0.98	357	344	3	-0.39	-1.32	349
7	IN	352	1	-0.37	-1.02	355	345	2	-0.76	-0.50	347
	OUT	353	1	0.25	-0.39	356	344	1	0.27	0.38	349
8	IN	353	1	1.09	0.77	356	347	1	0.40	-0.33	349
	OUT	354	1	0.33	-0.49	356	348	1	0.74	0.35	351
9	IN	359	2	0.37	-0.73	365	354	3	0.35	-0.79	360
	OUT	357	1	0.26	-0.44	359	351	1	0.48	0.15	354
10	IN	367	6	1.10	0.60	384	361	6	1.11	0.59	380
	OUT	360	2	1.19	0.92	367	353	2	0.90	0.18	359
11	IN	413	28	0.87	0.44	499	410	30	0.93	0.45	499
	OUT	380	11	0.57	-0.15	411	370	10	0.72	-0.04	396
12	IN	408	14	0.35	-0.84	440	404	16	0.52	-0.40	445
	OUT	379	5	0.33	-0.96	389	368	4	0.50	0.02	380
13	IN	483	50	0.62	0.06	656	482	50	0.50	-0.23	627
	OUT	411	23	1.63	5.93	549	396	19	0.83	0.88	470
14	IN	571	95	0.71	-0.42	846	565	97	0.79	-0.27	810
	OUT	462	88	1.30	2.43	825	449	78	1.09	3.37	745
15	IN	581	81	-0.01	-0.49	799	570	83	0.20	-0.04	801
	OUT	477	88	0.23	0.38	770	469	91	0.17	-0.06	729
16	IN	472	63	0.47	-0.40	656	472	59	-0.01	-0.82	609
	OUT	419	51	0.95	2.03	605	423	45	0.42	0.98	560
17	IN	401	49	1.41	0.89	548	393	44	1.32	0.59	529
	OUT	389	23	1.60	2.00	476	389	32	1.80	3.26	535
18	IN	354	8	-0.09	-1.35	366	346	9	-0.03	-1.37	360
	OUT	364	6	-0.14	-1.42	373	358	5	-0.11	-1.44	367
19	IN	340	1	1.14	1.50	344	332	1	0.95	1.01	335
	OUT	353	3	0.52	0.29	360	348	2	0.70	0.32	353
20	IN	340	1	0.24	-0.22	343	332	1	0.31	-0.41	334
	OUT	352	2	0.01	-0.57	357	346	1	0.06	-0.11	349
21	IN	334	3	0.23	-1.26	339	326	2	0.35	-1.31	332
	OUT	349	2	0.01	-1.04	353	343	2	0.19	-1.03	347
22	IN	333	2	-1.02	0.97	336	325	2	-0.89	-0.02	327
	OUT	347	1	-0.13	-0.32	351	341	1	-0.07	-0.45	344
23	IN	323	5	-0.78	-0.81	329	315	5	-0.76	-0.85	321
	OUT	343	3	-0.56	-0.32	348	337	3	-0.69	-0.53	342
24	IN	314	3	4.49	36.17	338	306	3	8.05	88.83	345
	OUT	333	2	1.03	1.45	340	329	2	3.21	22.51	345

BEST DOCUMENT AVAILABLE

DAY = 81026

HOUR		10 METER ALL	STD	SKEW	KUR	MAX	14 METER ALL	STD	SKEW	KUR	MAX
1	IN	357	2	0.57	1.09	363	354	2	0.54	1.46	360
	OUT	364	1	-0.19	-0.29	367	364	1	0.07	0.35	367
2	IN	355	1	0.08	-0.60	357	353	1	-0.42	0.21	354
	OUT	362	1	0.17	-0.27	365	362	1	0.53	-0.64	365
3	IN	356	2	0.65	-0.78	362	356	2	0.20	-1.00	360
	OUT	362	1	0.57	-0.13	365	364	1	-0.36	-0.78	366
4	IN	355	2	0.14	-0.69	360	355	3	-0.27	-0.52	360
	OUT	359	1	-0.08	0.03	361	360	1	0.17	0.05	362
5	IN	354	5	-1.79	2.63	359	354	4	-2.11	4.26	358
	OUT	359	2	-0.51	-0.21	363	360	1	-0.35	-0.57	363
6	IN	344	7	-0.64	-0.87	353	345	7	-0.59	-1.00	354
	OUT	355	1	-0.11	-1.03	357	357	2	-0.31	-1.40	360
7	IN	350	2	-0.99	-0.14	352	352	2	-0.84	-0.46	354
	OUT	353	2	0.26	-0.93	357	357	1	-0.37	-0.34	359
8	IN	349	1	0.08	-0.56	351	352	0	0.22	-0.22	353
	OUT	353	1	0.54	0.23	357	357	1	0.16	0.30	359
9	IN	355	3	0.48	-0.64	362	359	3	0.24	-0.90	365
	OUT	353	1	-0.11	0.06	356	358	1	-0.33	1.72	360
10	IN	362	7	1.05	0.44	382	368	7	1.15	0.58	388
	OUT	354	2	0.78	0.95	361	360	2	1.00	0.70	366
11	IN	416	33	0.87	0.44	512	424	37	1.07	1.10	543
	OUT	368	8	0.37	-0.39	392	373	9	0.97	1.18	404
12	IN	410	16	0.44	-0.67	449	418	17	0.26	-0.92	457
	OUT	369	4	0.22	-0.48	378	372	4	0.19	-0.87	381
13	IN	498	56	0.34	-0.82	630	508	62	0.82	0.33	725
	OUT	395	18	0.67	-0.18	448	394	18	0.66	1.18	446
14	IN	601	112	0.59	-0.56	886	622	118	0.45	-1.13	861
	OUT	415	85	1.03	4.91	811	432	70	1.56	3.53	726
15	IN	649	98	-0.50	-0.22	856	679	115	-0.49	-0.80	844
	OUT	432	116	0.41	-0.02	765	446	96	0.47	1.64	820
16	IN	512	91	0.21	-1.11	701	537	101	0.28	-0.50	763
	OUT	400	53	0.58	2.70	611	417	60	1.09	2.95	664
17	IN	399	43	1.07	0.05	531	437	86	0.90	-0.77	616
	OUT	380	28	0.78	5.17	504	390	27	2.39	9.25	537
18	IN	348	9	-0.03	-1.28	363	347	10	-0.05	-1.37	363
	OUT	365	5	-0.05	-1.48	373	369	5	-0.08	-1.41	378
19	IN	334	1	-0.49	0.03	337	330	2	0.11	0.78	335
	OUT	357	2	0.51	-0.13	361	359	2	0.47	0.32	365
20	IN	335	1	0.10	-0.10	338	331	1	-1.01	1.56	333
	OUT	355	1	0.02	-0.09	358	356	1	-0.29	-0.42	358
21	IN	329	3	0.21	-1.55	334	325	3	0.22	-1.27	331
	OUT	351	2	-0.04	0.24	356	353	2	0.14	-0.83	357
22	IN	327	2	-0.93	1.10	330	323	2	-0.74	-0.46	326
	OUT	348	1	0.32	-0.28	351	350	1	0.32	-0.20	352
23	IN	317	5	-0.78	-0.56	324	313	6	-0.88	-0.74	320
	OUT	344	3	-0.88	0.07	348	346	2	-0.53	-0.50	350
24	IN	308	4	7.02	74.70	348	303	4	5.97	59.58	342
	OUT	337	2	1.67	6.93	349	338	2	0.74	0.60	344

BEST DOCUMENT AVAILABLE

DAY = 81026

		17 METER					21 METER				
HOUR		ALL	STD	SKEW	KUR	MAX	ALL	STD	SKEW	KUR	MAX
1	IN	356	2	0.51	0.80	363	334	5	-0.48	-0.65	343
	OUT	369	1	0.99	3.54	372	349	5	-0.48	-0.61	359
2	IN	355	1	0.07	-1.03	357	331	5	-0.25	-0.72	341
	OUT	367	1	0.41	-0.01	369	346	6	-0.01	-0.78	360
3	IN	359	2	0.01	-0.70	364	335	5	-0.11	-0.22	347
	OUT	368	1	0.06	-0.65	370	344	5	-0.05	-0.61	355
4	IN	359	2	-0.17	-0.18	364	328	5	-0.14	-0.48	338
	OUT	366	1	-1.57	6.86	368	335	5	0.20	-0.91	346
5	IN	353	5	-2.04	4.44	358	322	9	-1.20	0.98	333
	OUT	360	1	-0.72	0.60	362	330	5	-0.23	0.60	340
6	IN	343	7	-0.72	-0.78	351	307	8	-1.57	4.78	319
	OUT	356	2	-0.79	-0.04	359	325	4	-4.95	49.53	333
7	IN	351	2	-0.93	-0.29	354	320	4	-0.27	-0.65	330
	OUT	357	1	-0.40	-0.75	359	328	3	-0.03	-0.18	337
8	IN	351	1	0.29	-0.18	354	317	2	-0.08	0.75	323
	OUT	358	0	-0.18	-0.32	360	325	2	0.14	0.34	331
9	IN	361	4	0.25	-0.77	369	327	5	0.24	-0.46	338
	OUT	358	1	-0.02	0.19	360	324	2	-0.11	0.09	329
10	IN	371	8	1.30	1.15	395	340	10	1.09	0.56	369
	OUT	359	1	1.12	0.88	364	326	3	0.73	0.24	335
11	IN	432	41	0.91	0.25	552	411	48	0.90	0.08	540
	OUT	365	4	1.28	4.63	389	335	8	1.01	0.90	364
12	IN	423	20	0.43	-0.65	472	399	22	0.33	-0.46	459
	OUT	365	2	0.18	-0.34	370	333	5	-0.16	-0.40	345
13	IN	516	63	0.58	-0.31	707	514	79	0.71	-0.01	756
	OUT	379	14	1.75	5.07	455	356	15	0.73	0.03	394
14	IN	596	95	0.09	-0.70	827	654	146	0.21	-1.37	968
	OUT	381	73	0.03	2.55	664	396	41	0.56	-0.67	514
15	IN	616	115	-0.50	-0.33	803	708	98	-1.58	2.88	835
	OUT	356	111	-0.15	1.38	758	428	39	-0.20	1.55	558
16	IN	470	101	0.03	-0.82	657	530	120	-0.18	-0.96	725
	OUT	339	53	0.30	2.54	529	399	43	0.12	0.30	557
17	IN	361	82	0.82	-0.59	549	401	90	0.81	-0.97	578
	OUT	323	36	0.83	2.19	458	377	29	0.66	-0.54	471
18	IN	321	33	-0.61	-1.25	360	296	15	-0.14	-1.03	321
	OUT	347	35	-0.77	-1.39	375	329	8	-0.19	-0.31	348
19	IN	330	2	0.29	-0.15	336	278	6	-0.46	-0.13	290
	OUT	365	2	-0.51	3.31	369	321	6	-0.57	-0.33	333
20	IN	333	2	0.39	0.39	338	286	4	-0.39	0.09	295
	OUT	363	1	0.31	0.00	366	323	4	-0.56	0.32	331
21	IN	329	3	0.59	0.10	337	284	5	-0.40	-0.35	294
	OUT	362	1	0.38	0.04	366	324	4	-0.59	-0.47	331
22	IN	329	2	0.67	0.72	335	281	6	-0.14	-0.37	294
	OUT	360	1	0.59	0.22	363	319	5	-0.04	-0.56	331
23	IN	319	5	-0.55	-1.03	328	274	4	-0.78	1.19	283
	OUT	358	1	-0.62	0.64	361	320	6	-0.18	0.59	338
24	IN	312	4	1.16	0.71	324	311	20	-0.21	-1.22	345
	OUT	354	1	-0.15	0.20	357	361	17	-0.32	-1.18	388

BEST DOCUMENT AVAILABLE

DAY = 81026

HOUR		26 METER ALL	STD	SKEW	KUR	MAX	33 METER ALL	STD	SKEW	KUR	MAX
1	IN	348	3	0.72	1.32	357	348	3	0.54	0.88	356
	OUT	364	1	1.68	4.37	369	369	1	1.47	4.14	373
2	IN	348	2	-0.11	-1.14	351	347	1	-0.06	-0.83	350
	OUT	362	1	-0.23	0.36	364	367	1	0.30	-0.63	370
3	IN	356	3	-0.61	-0.69	360	354	2	-0.42	-0.92	357
	OUT	365	1	-0.16	-0.42	367	366	1	0.05	-1.34	368
4	IN	358	3	-0.31	-0.63	362	352	4	-0.41	-0.49	358
	OUT	365	1	-0.50	0.52	367	361	1	0.42	1.21	364
5	IN	356	6	-2.09	4.31	362	351	6	-2.08	4.15	357
	OUT	364	2	-0.40	-0.14	367	361	1	-0.07	-1.22	364
6	IN	342	10	-0.48	-1.14	355	337	10	-0.50	-1.09	350
	OUT	361	1	-0.51	-0.16	363	358	2	-0.47	-0.95	360
7	IN	352	3	-0.75	-0.93	355	347	2	-0.76	-0.77	350
	OUT	361	1	-0.08	-0.46	364	357	2	-0.12	-0.75	360
8	IN	355	1	0.66	0.45	358	349	1	0.92	2.42	351
	OUT	362	1	-0.34	0.62	364	359	1	-0.29	-0.38	361
9	IN	368	5	0.24	-0.78	379	360	5	0.17	-0.76	369
	OUT	365	1	-0.05	1.08	368	358	1	-0.77	0.71	360
10	IN	382	11	1.20	0.80	413	373	10	1.22	0.93	402
	OUT	367	3	1.21	0.97	375	359	1	1.85	4.56	364
11	IN	467	57	1.00	0.59	642	452	52	0.94	0.48	608
	OUT	385	13	1.12	1.04	427	369	7	0.83	0.53	389
12	IN	453	26	0.51	-0.40	522	442	24	0.48	-0.47	505
	OUT	382	6	0.35	-0.63	397	370	3	0.55	0.63	380
13	IN	585	91	0.75	0.09	859	563	83	0.70	0.06	816
	OUT	414	23	0.86	0.37	486	390	15	0.85	0.81	441
14	IN	743	155	0.07	-1.44	1051	695	127	0.04	-1.42	956
	OUT	454	44	-0.02	-0.88	542	418	27	0.35	2.87	525
15	IN	803	99	-2.21	5.33	921	736	84	-2.01	4.63	831
	OUT	474	29	-2.18	4.52	505	431	30	0.07	7.66	564
16	IN	607	130	-0.41	-0.90	787	562	104	-0.31	-0.99	709
	OUT	439	42	-0.72	-0.73	494	416	21	-0.75	5.45	496
17	IN	447	107	0.72	-1.20	636	424	79	0.71	-1.22	565
	OUT	401	38	0.72	-1.13	470	396	13	0.69	-0.86	433
18	IN	330	14	-0.41	0.30	355	334	13	-0.08	-1.43	353
	OUT	361	6	-5.76	57.67	372	377	4	-0.05	-1.47	384
19	IN	309	2	0.40	-0.65	314	312	1	0.31	-1.18	315
	OUT	354	1	0.47	0.90	358	368	2	0.11	-0.94	372
20	IN	316	1	-0.56	-0.60	318	316	1	-0.56	-0.04	317
	OUT	353	1	0.11	0.17	355	363	1	0.11	-0.95	366
21	IN	310	9	-6.61	51.57	318	310	3	0.33	-1.41	316
	OUT	350	8	-7.89	65.29	355	359	1	0.30	-0.72	363
22	IN	310	13	-5.11	26.25	316	309	2	-1.14	0.54	312
	OUT	348	14	-5.37	27.98	354	356	1	0.04	-0.90	358
23	IN	299	10	-3.94	28.98	308	296	7	-1.00	-0.46	303
	OUT	346	7	-10.59	130.29	351	352	2	-0.40	-0.34	356
24	IN	292	5	0.87	0.92	312	284	4	2.11	9.40	310
	OUT	342	2	-2.18	14.81	345	346	1	-0.27	3.48	349

BEST DOCUMENT AVAILABLE

(c) overcast day

DAY = 81020

		1 METER					6 METER				
HOUR		ALL	STD	SKEW	KUR	MAX	ALL	STD	SKEW	KUR	MAX
1	IN	334	1	0.29	-1.01	336	329	1	1.20	0.66	331
	OUT	335	1	-0.32	-0.10	337	329	1	1.27	1.48	331
2	IN	334	1	0.11	-1.18	336	329	1	0.73	0.12	331
	OUT	335	1	0.14	0.57	337	329	1	0.79	0.05	331
3	IN	333	0	0.28	-0.57	334	328	0	-0.28	-0.01	329
	OUT	335	1	-0.64	0.18	337	328	0	1.42	5.70	330
4	IN	334	1	0.21	-1.65	336	329	1	0.42	-1.24	331
	OUT	335	1	-0.68	-0.24	336	329	1	0.52	-0.25	331
5	IN	335	0	-1.23	0.58	335	330	0	-0.26	-1.32	331
	OUT	335	0	-0.58	-0.61	336	329	1	-0.01	-0.77	331
6	IN	335	1	0.10	-1.47	336	330	1	-0.20	-1.30	331
	OUT	335	0	0.22	-1.01	336	329	1	0.14	-0.60	331
7	IN	335	0	-0.37	-0.64	336	329	1	0.37	-1.20	330
	OUT	335	0	-0.54	0.03	336	329	1	0.16	-1.16	330
8	IN	335	0	0.58	-0.19	336	331	9	12.57	158.40	442
	OUT	335	0	0.63	-0.03	336	330	9	12.58	158.52	441
9	IN	341	4	0.28	-1.35	349	336	4	0.30	-1.30	344
	OUT	338	2	0.28	-1.38	343	331	1	0.18	-1.22	334
10	IN	351	5	0.53	-1.07	362	346	6	0.57	-0.99	358
	OUT	343	2	0.46	-1.24	347	336	2	0.53	-1.01	340
11	IN	356	8	0.98	-0.40	374	351	8	1.00	-0.32	370
	OUT	345	3	0.96	-0.53	353	337	2	1.15	0.01	343
12	IN	372	5	0.07	-1.06	382	371	32	10.85	122.21	727
	OUT	352	2	-0.16	-0.65	357	345	31	11.42	130.86	696
13	IN	394	15	0.44	-0.77	424	391	15	0.38	-0.91	420
	OUT	362	5	0.35	-0.78	373	349	4	0.43	-0.88	358
14	IN	410	25	0.19	-1.18	461	418	25	-0.20	-0.96	462
	OUT	369	10	0.08	-1.24	390	357	7	-0.30	-0.74	371
15	IN	388	12	0.47	-0.88	415	.	.	.	.	.
	OUT	361	5	0.32	-1.04	372	.	.	.	.	.
16	IN	379	8	1.52	3.20	411	.	.	.	.	.
	OUT	356	4	1.55	3.07	370	.	.	.	.	.
17	IN	349	4	1.60	1.77	364	.	.	.	.	.
	OUT	343	2	1.26	0.75	350	.	.	.	.	.
18	IN	338	4	0.47	-0.55	347	.	.	.	.	.
	OUT	338	2	0.65	-0.11	343	.	.	.	.	.
19	IN	332	0	0.57	-0.13	333	.	.	.	.	.
	OUT	335	1	0.32	-0.37	336	.	.	.	.	.
20	IN	331	0	-0.52	-0.36	332	.	.	.	.	.
	OUT	334	0	-0.14	-0.14	335	.	.	.	.	.
21	IN	329	1	0.07	-1.76	331	.	.	.	.	.
	OUT	333	1	-0.10	-1.44	334	.	.	.	.	.
22	IN	328	0	-0.66	-0.22	329	.	.	.	.	.
	OUT	332	0	0.42	0.19	333	.	.	.	.	.
23	IN	327	1	-0.32	-0.90	329	.	.	.	.	.
	OUT	331	0	0.06	-0.18	332	.	.	.	.	.
24	IN	326	1	0.04	-1.08	328	.	.	.	.	.
	OUT	330	0	0.26	-0.66	331	.	.	.	.	.

BEST DOCUMENT AVAILABLE

DAY = 81020

HOUR		10 METER ALL	STD	SKEW	KUR	MAX	14 METER ALL	STD	SKEW	KUR	MAX
1	IN	332	1	1.22	1.51	336	333	1	0.63	-0.92	335
	OUT	335	1	-1.18	3.67	337	336	1	0.00	0.56	338
2	IN	333	1	0.52	1.52	336	333	1	0.35	-0.27	335
	OUT	335	1	-0.94	1.65	338	336	1	-1.30	1.96	338
3	IN	332	0	-0.31	0.28	333	333	0	-0.22	0.05	333
	OUT	335	1	-0.97	5.86	337	336	0	0.01	0.26	338
4	IN	333	1	1.02	0.43	336	333	1	0.75	-0.06	335
	OUT	335	1	-0.72	0.31	337	336	1	-0.81	0.77	338
5	IN	334	1	1.52	3.38	336	334	0	1.18	3.46	336
	OUT	335	1	0.77	0.03	338	335	1	-0.23	-1.09	337
6	IN	334	1	0.92	1.87	336	334	0	0.46	2.02	336
	OUT	335	1	-0.18	-1.25	338	335	1	-0.13	-1.19	338
7	IN	333	1	1.21	4.81	336	333	0	0.70	2.33	335
	OUT	336	1	-0.91	2.14	339	335	1	-0.42	-1.04	337
8	IN	334	1	0.22	-1.41	336	334	1	0.41	-0.60	336
	OUT	335	1	-0.23	-0.68	337	334	1	0.37	-0.05	337
9	IN	341	4	0.33	-1.29	349	341	5	0.36	-1.26	351
	OUT	337	2	0.18	-1.35	340	337	2	0.38	-1.17	340
10	IN	352	6	0.53	-1.12	363	354	7	0.57	-0.91	368
	OUT	341	2	0.63	-0.70	345	341	2	0.42	-1.21	345
11	IN	357	9	0.98	-0.39	378	359	10	1.13	-0.07	382
	OUT	342	2	0.84	-0.23	348	342	2	1.31	0.48	349
12	IN	376	6	-0.07	-0.88	386	379	7	0.10	-1.16	390
	OUT	347	2	-0.05	-0.52	351	348	2	0.37	-0.61	352
13	IN	401	17	0.45	-0.83	435	404	18	0.41	-0.86	440
	OUT	354	5	0.52	-0.79	364	353	4	0.46	-0.51	364
14	IN	421	30	0.24	-1.11	481	425	32	0.25	-1.24	487
	OUT	362	8	0.15	-0.92	379	360	8	0.27	-1.19	376
15	IN	395	14	0.45	-0.83	426	397	15	0.36	-1.02	429
	OUT	356	4	0.41	-0.72	365	354	4	0.15	-1.21	361
16	IN	384	9	1.73	3.58	421	386	11	1.75	3.85	428
	OUT	352	3	1.37	2.28	362	350	3	1.41	1.83	360
17	IN	350	5	1.70	2.33	368	350	6	1.61	1.74	370
	OUT	342	2	1.55	2.15	347	340	2	1.32	0.75	346
18	IN	338	4	0.47	-0.56	348	336	5	0.57	-0.44	348
	OUT	338	2	0.37	-0.07	341	336	2	0.71	-0.07	340
19	IN	331	1	0.18	-0.74	332	329	0	0.23	-0.77	330
	OUT	335	1	0.16	-0.55	336	333	1	0.03	-0.43	335
20	IN	331	0	0.10	-0.01	331	328	0	-0.69	0.10	329
	OUT	334	0	-0.31	1.10	335	333	0	0.36	0.82	334
21	IN	329	1	0.07	-1.68	330	326	1	-0.04	-1.79	328
	OUT	333	1	-0.03	-0.94	335	332	1	-0.28	-0.70	333
22	IN	328	0	-0.21	-0.49	329	325	0	-0.04	-1.17	326
	OUT	332	0	0.05	-0.30	333	330	0	0.35	-0.03	332
23	IN	327	1	-0.23	-1.43	328	325	1	-0.29	-1.54	326
	OUT	331	1	0.25	-0.13	333	330	0	-0.32	-0.41	331
24	IN	326	1	-0.34	-0.83	327	323	1	-0.35	-1.10	325
	OUT	330	0	-0.24	-0.08	331	329	0	0.29	0.51	330

BEST DOCUMENT AVAILABLE

DAY = 81020

HOUR		17 METER ALL	STD	SKEW	KUR	MAX	21 METER ALL	STD	SKEW	KUR	MAX
1	IN	282	11	5.29	28.29	345	390	8	-1.16	-0.29	400
	OUT	286	11	5.36	28.75	349	393	8	-1.11	-0.34	404
2	IN	282	1	0.63	-0.09	286	395	2	-1.92	12.36	401
	OUT	285	1	0.54	0.58	289	398	2	-1.85	10.61	404
3	IN	312	33	0.11	-2.01	347	381	6	2.00	2.57	399
	OUT	316	33	0.11	-2.01	352	384	6	1.97	2.49	403
4	IN	298	34	0.73	-1.47	348	351	22	0.50	-1.72	385
	OUT	301	34	0.73	-1.46	351	353	23	0.51	-1.73	389
5	IN	282	2	-0.83	0.65	285	336	3	0.94	0.44	344
	OUT	283	2	-0.48	-0.12	287	337	3	0.65	-0.07	345
6	IN	282	1	-0.03	0.34	286	336	2	-0.02	-0.15	342
	OUT	284	2	-0.39	0.53	289	338	2	0.02	-0.33	344
7	IN	284	2	0.81	4.98	293	334	2	-0.07	-0.26	340
	OUT	285	2	0.87	4.08	295	335	3	0.10	-0.39	343
8	IN	286	2	0.08	-0.41	290	336	15	2.84	6.68	390
	OUT	287	2	0.86	0.11	293	336	15	2.84	6.64	390
9	IN	293	5	0.51	-0.91	304	337	6	0.17	-0.19	353
	OUT	287	1	0.35	-0.36	291	329	2	-0.56	5.62	337
10	IN	307	18	3.04	9.59	380	350	9	0.46	-0.98	370
	OUT	289	22	-3.93	53.16	354	330	3	0.49	2.75	345
11	IN	311	10	0.96	0.11	335	359	13	0.53	-0.94	386
	OUT	289	3	-0.47	0.63	297	333	7	1.65	2.60	354
12	IN	332	7	0.10	-1.19	347	392	16	0.09	-1.05	422
	OUT	291	3	-0.43	-0.40	297	344	12	0.21	-1.76	362
13	IN	356	26	1.74	4.28	454	440	29	-0.03	-0.64	494
	OUT	290	14	3.52	15.26	356	361	9	-1.66	2.36	374
14	IN	374	27	0.28	-0.95	437	459	38	0.57	-0.75	555
	OUT	289	10	0.13	0.85	322	358	10	0.33	0.04	383
15	IN	348	16	0.64	-0.61	384	416	22	0.78	0.58	475
	OUT	293	5	-0.59	1.41	305	350	12	0.40	-1.39	374
16	IN	350	20	1.32	0.92	407	417	14	1.67	3.47	472
	OUT	305	18	2.33	3.82	358	363	3	0.67	1.07	372
17	IN	326	30	0.26	-1.84	363	360	14	0.13	-0.21	396
	OUT	315	32	0.31	-1.89	353	345	11	-0.79	-1.21	358
18	IN	351	5	0.58	-0.44	363	350	6	0.47	-0.34	365
	OUT	351	1	0.79	1.17	354	349	2	0.10	0.14	355
19	IN	344	1	-1.99	8.18	346	342	2	-0.34	2.34	347
	OUT	350	1	-1.47	4.63	352	349	2	-0.29	2.75	354
20	IN	344	1	-0.75	-0.14	345	345	2	0.03	0.23	351
	OUT	349	1	-0.30	-0.45	350	350	2	0.09	0.31	356
21	IN	343	2	-0.08	-1.22	345	344	3	-0.11	-0.88	350
	OUT	349	1	-0.48	-0.90	351	351	2	-0.23	-0.37	356
22	IN	343	1	0.09	-1.37	344	342	3	0.14	-0.77	349
	OUT	349	0	0.24	0.23	350	349	3	-0.05	-0.38	355
23	IN	342	1	-0.32	-1.48	344	340	3	0.24	-0.85	347
	OUT	348	0	-0.24	0.10	349	347	2	0.35	-0.45	353
24	IN	341	1	-0.69	-0.70	343	336	3	-0.37	-0.55	342
	OUT	347	0	0.18	0.20	348	343	2	-0.35	-0.03	349

BEST DOCUMENT AVAILABLE

DAY = 81020

HOUR		26 METER ALL	STD	SKEW	KUR	MAX	33 METER ALL	STD	SKEW	KUR	MAX
1	IN	346	1	0.95	0.32	347	327	1	1.02	0.02	329
	OUT	348	1	-1.22	0.94	351	332	0	0.34	-0.30	333
2	IN	346	1	0.04	-0.88	348	328	1	0.05	-0.94	329
	OUT	348	1	-0.57	-0.19	351	332	0	0.23	-0.00	333
3	IN	345	0	-0.48	-0.20	345	326	0	-0.14	0.10	327
	OUT	347	2	-0.77	-0.86	350	331	1	-0.02	-0.50	333
4	IN	343	13	-4.71	23.17	349	327	1	0.40	-1.44	329
	OUT	345	13	-4.70	22.98	350	330	1	-1.06	0.38	332
5	IN	340	19	-1.74	3.42	393	328	0	0.29	-0.37	329
	OUT	341	19	-1.74	3.39	393	330	1	-0.87	-0.32	332
6	IN	344	16	-4.18	15.69	349	327	1	-0.45	-0.41	328
	OUT	344	16	-4.17	15.64	351	330	1	-1.55	2.84	332
7	IN	335	29	-1.86	1.54	364	327	1	0.78	0.00	328
	OUT	335	29	-1.86	1.54	364	328	1	0.78	-0.12	330
8	IN	343	16	-0.40	1.18	396	328	1	0.75	-0.34	330
	OUT	343	16	-0.38	1.22	396	329	1	0.49	-0.68	331
9	IN	359	16	-0.18	16.72	463	338	7	0.26	-1.31	352
	OUT	350	12	-0.38	30.63	443	330	1	-0.07	-1.06	332
10	IN	378	13	-1.42	9.59	402	355	9	0.56	-0.95	374
	OUT	355	8	-8.06	73.06	361	333	1	0.33	-1.14	335
11	IN	386	15	1.05	-0.17	421	362	14	1.06	-0.14	395
	OUT	356	3	0.95	-0.25	363	334	2	0.98	0.03	340
12	IN	418	11	0.05	-0.99	436	390	10	0.09	-1.11	406
	OUT	363	3	-3.03	23.88	368	339	2	0.03	-0.59	343
13	IN	457	29	0.44	-0.83	514	427	26	0.36	-0.95	475
	OUT	371	6	0.70	-0.45	385	345	4	0.20	-1.08	353
14	IN	486	48	0.26	-1.12	583	457	43	0.27	-1.10	544
	OUT	379	11	0.35	-1.07	403	353	6	0.27	-0.61	370
15	IN	438	21	0.36	-0.88	481	418	20	0.46	-0.89	462
	OUT	368	8	-3.52	20.13	377	351	3	0.35	-0.87	358
16	IN	422	15	1.53	2.90	478	406	14	1.61	3.21	459
	OUT	363	3	1.14	2.27	375	350	2	1.42	2.25	359
17	IN	370	8	1.70	2.18	398	356	8	1.71	2.22	384
	OUT	352	1	1.13	1.09	357	341	2	1.45	1.46	347
18	IN	351	6	0.61	-0.38	367	337	6	0.53	-0.46	352
	OUT	348	2	-0.06	0.41	352	338	1	0.56	-0.22	341
19	IN	342	0	0.53	0.02	343	327	0	0.56	0.41	329
	OUT	347	1	-2.45	20.16	348	335	1	0.25	-0.37	337
20	IN	343	0	0.03	0.10	343	327	0	-0.46	-0.17	328
	OUT	346	2	-1.12	-0.29	348	334	0	0.08	-0.10	335
21	IN	341	2	-0.02	-1.79	343	325	2	-0.01	-1.73	327
	OUT	345	1	-0.78	0.93	348	333	1	-0.43	-0.67	334
22	IN	341	1	0.19	-1.35	342	324	1	0.33	-1.09	325
	OUT	345	1	-2.69	10.78	347	332	0	-0.01	0.38	334
23	IN	340	1	-0.31	-1.38	341	323	1	-0.27	-1.43	325
	OUT	344	1	-2.27	7.35	346	331	1	-0.24	0.21	333
24	IN	339	1	-0.69	-0.64	341	322	1	-0.66	-0.60	324
	OUT	344	1	-1.36	9.11	346	330	0	0.06	0.40	331